*BY ORDER OF THE COMMANDER*
*AIR FORCE MATERIEL COMMAND*

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*Acquisition*

# *MODIFICATION MANAGEMENT*

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OPR: HQ AFMC/DRIA (Maj David Snyder) Certified by: HQ AFMC/DRI (Mr. Glenn Miller)
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This pamphlet does not apply to the Air National Guard or Air Force Reserve Command units and members. The pamphlet is intended to provide single managers (SM) and their management staffs with a basic understanding of the terms and processes associated with modification management. The guide is a discretionary document and does not contain any mandatory direction or policy.

## Chapter 1

## MODIFICATION OVERVIEW AND POLICY (PART I)

**1.1. General.** The Air Force is faced with aging military systems, new threats, and limited funds to develop new systems. The Air Force Materiel Command (AFMC) uses the modification process to focus new technology into existing weapon systems, improve the reliability and maintainability (R&M) of the weapon system, and address environmental problems. A dollar stretching proposition is to modify what is in the inventory.

1.1.1. Modification programs offer the Air Force ways to improve the capabilities of weapon systems or correct material deficiencies as a cost effective alternative to reduce the number of new development programs. These processes can improve system performance, and/or R&M, or adapt systems to meet new or changing threats during their life cycle.

1.1.2. The AFMC Corporate Planning Board, with approval by AFMC/CC, will accomplish the infrastructure planning functions based on the Integrated Weapon System Management (IWSM) philosophy. The two primary changes in the AFMC modification process focus on the application of streamlined acquisition processes and the IWSM SM concept.

1.1.3. IWSM is a management concept that integrates all life cycle management activities of a system or commodity under a SM: the System Program Director (SPD), the Product Group Manager (PGM), or the Materiel Group Manager (MGM), also called "cradle to grave" or "seamless" management. The acquisition process, sustainment, and Foreign Military Sales (FMS) and International cooperative activities are under the IWSM architecture.

**1.2. Modifications As Acquisitions:**

1.2.1. Acquisition Definition. An acquisition refers to a disciplined management approach for acquiring systems, modifications, and materiel that satisfies the major commands (MAJCOM) needs.

1.2.2. Modification Definition. A modification is a temporary or permanent change to correct deficiencies, improve R&M, or to improve capabilities of an end item or system. It is applicable to aircraft, missile, space systems, support equipment, trainers, pods, etc. The alteration changes, as a minimum, the form, fit, or function of the item. A modification of a materiel item that is out of production may be referred to as an "upgrade." However, for purposes of this document, an upgrade is a modification and follows the same general process presented here.

**1.3. Acquisition Categories (ACAT) And Milestone Decision Authority (MDA).** The Acquisition Management Process provides a general model for managing Major Defense Acquisition Programs (MDAP) and Major Automated Information System (MAIS) acquisition programs. The process acknowledges that every acquisition program is different. Any singular MDAP or MAIS need not follow the entire process. Cognizant of this fact, the SM and the MDA will structure the MDAP or MAIS to ensure a logical progression through the acquisition process.

1.3.1. The SMs and the MDAs for other than MDAP and MAIS acquisition programs will generally adhere to the process; however, they will tailor the process, as appropriate, to best match the conditions of individual nonmajor programs. (See DoD 5000.2-R, Part 1 for more details on the acquisition management process.)

1.3.2. Modification Acquisition Categories. Upon initiation, depending upon size and complexity, all acquisition/modification programs will be placed in an ACAT. (This does not apply to highly classified programs.) The categories are: ACAT I, ACAT IA, ACAT IC, ACAT ID, ACAT II, and ACAT III. Table 1.1 shows selection criteria, designation authority, and MDA for all the ACATs.

1.3.2.1. Any modification that is of sufficient cost and complexity that it could itself qualify as an ACAT I or ACAT IA program will be considered for management as a separate acquisition effort. Modifications that do not cross the ACAT I or IA threshold will be considered part of the program being modified, unless the program is no longer in production. In that case, the modification will be considered a separate acquisition effort.

1.3.3. MDA for Modification Programs. The MDA for modification programs will be based on a correlated assessment of the program cost and risk. Although all modifications should follow the acquisition process, modification programs vary greatly in cost and technological requirements. Technology requirements for modifications can range from that already being used by other Air Force weapon systems to that which must be developed specifically for a new Air Force mission. ***Therefore, a one size fits all philosophy is not an efficient or effective use of Air Force resources in managing modifications.***

1.3.3.1. Considering the wide range of cost and risk involved in Air Force modifications, it is logical to evaluate modification programs and determine the oversight levels, or MDA, and documentation based on both cost and risk, instead of risk alone. This permits programs with low risk but relatively high cost to be placed at the appropriate decision level for the MDA and allows documentation to be limited to that essential for a viable audit trail. Therefore, the Modification Integrated Product Team (ModIPT) will begin the modification with the accomplishment of a risk analysis, as well as, an estimate of the total program costs.

**Table 1.1. Acquisition Categories and Milestone Decision Authority.**

| ACAT | SELECTION CRITERIA | DESIGNATION AUTHORITY | MDA |
|---|---|---|---|
| **I** | An MDAP | USD(A&T) | ACAT ID - Under Secretary of Defense (Acquisition and Technology (USD(A&T)) |
| | Programs designated ACAT I by the USD(A&T) | ACAT I programs are further designated by the USD(A&T) as either:<br>ACAT ID – The "D" refers to the Defense Acquisition Board (DAB).<br>ACAT IC – The "C" refers to Component. | ACAT IC - DoD Component Head or if delegated, the DoD Component Acquisition Executive (CAE) |
| | Not determined to be a highly sensitive classified program by the Secretary of Defense | | |

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|---|---|---|---|
| | Estimated by the USD(A&T) to require:<br>An eventual total expenditure for research, development, test, and evaluation of more than $355M in fiscal year (FY) 96 constant dollars, or<br>An eventual expenditure for procurement of more than $2.135B in FY 96 constant dollars. | | |
| **IA** | A MAIS acquisition program | ASD Command, Control, Communications (C3I) | ACAT IAM – Chief Information Officer (CIO) of the Department of Defense (DoD) |
| | Programs designated by the Assistant Secretary of Defense for C3I, and Intelligence (ASD(C3I)) to be ACAT IA | ACAT IA programs are further designated by the ASD(C3I) as either:<br>ACAT IAM – The "M" refers to Major Automated Information Systems Review Council (MAISRC).<br>ACAT IAC – The "C" refers to component. | ACAT IAC – DoD CIO, or CAE |
| | Estimated to require:<br>Program costs for any single year in excess of $30M in FY 96 constant dollars, or<br>Total program costs in excess of $120M in FY 96 constant dollars, or<br>Total life cycle costs in excess of $360M in FY 96 constant dollars. | | |

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|---|---|---|---|
| **II** | A program not meeting the criteria for Category I, but meeting the criteria for a major system | DoD component head | DoD CAE |
| | Designated by the DoD Component Head as an ACAT II program. | | |
| | A system will be considered a major system if it is estimated by the USD(A&T) to require:<br>An eventual expenditure for research, development, test, and evaluation of more than $135M in FY 96 constant dollars, or<br>An eventual expenditure for procurement of more than $640M in FY 96 constant dollars. | | |
| **III** | Program not meeting the criteria for ACATI, ACAT IA, or ACAT II that have been designated Category III by the DoD CAE. | DoD CAE | Lowest level deemed appropriate by the designation authority |
| | This category includes less than MAISs. | | |

**1.4. Acquisition/Modification Cycle:** The acquisition cycle is composed of four phases:

1.4.1. Concept Exploration (CE):

- Consists of competitive, parallel short term concept studies
- Define and evaluate the feasibility of alternative concepts
- Provide a basis for assessing the relative merits (i.e.: advantages and disadvantages, degree of risk) of these concepts at the next milestone decision point
- Use analysis of alternatives, as appropriate, to facilitate comparisons of alternative concepts

1.4.1.1. Defining the most promising system concepts in terms of:

- Initial
- Broad objectives for cost
- Schedule, performance
- Software requirements
- Opportunities for tradeoffs
- Overall acquisition strategy
- Test and evaluation strategy

1.4.2. Program Definition and Risk Reduction (PD&RR):

- Identify and analyze major system alternatives
- Examine selected subsystems
- Develop the Integrated Master Plan (IMP) which includes:
  - Plans for risk mitigation
  - Schedule for producing all required planning for supporting engineering specialties
  - Determine whether or not to proceed to Engineering and Manufacturing Development (EMD) Phase

1.4.3. EMD:

- Translate most promising design approach into a stable, interoperable, producible, supportable, and cost effective design
- Validate the manufacturing or production process
- Demonstrate system capabilities through testing
- Conduct trial installation, kit proof, and validate and verify Time Compliance Technical Order (TCTO)

1.4.4. Production, Fielding/Deployment, and Operational Support:

- Achieve an operational capability that satisfies mission needs
- Produce and deliver an effective, fully supported system at an affordable cost
- Conduct follow on production and operational verification testing

1.4.4.1. Following the acquisition cycle, a modification program has four basic steps:

- Need - perceived threat is validated and a program/project is initiated
- Development - the modification needs to be designed and tested; includes the modification kit, which is that collection of hardware, software, data, and instructions
- Production – Caution; modification kit(s) must be complete with all hardware, software and data required for installation and operation and support of modified end item: Concurrent release of logistic support
- Installation - the modification is actually installed into the end item

***NOTE:***

Current Air Force directives and instructions state that modifications are to be treated as acquisition programs. In other words, even though we have a fielded system and are in the sustainment portion of the life cycle, the modification is treated as if we were starting out in development. The question that must be answered is where do we begin: CE, PD&RR, or EMD phase. As a general guide, if you are making system level modifications, you would begin in the CE or the PD&RR phase. If system level changes are high risk and not clearly defined, it would be better to start in the CE phase. Changes below the system level usually begin in the EMD phase.

**Figure 1.1.** Shows the acquisition milestones and phases for those modification activities under a development effort.

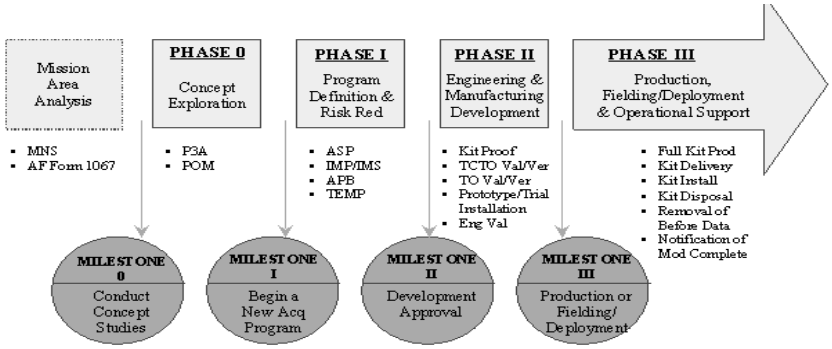


Figure 1.1 Acquisition Milestones and Phases

**1.5. Modification Documentation.** One of the most important elements in effective management of acquisition programs is the timely and unrestricted flow of information between the MDA and the SM responsible for managing the modification. In addition, there must be appropriate accountability at all levels of the modification management process. Developing and communicating the acquisition strategy is one of the most important roles of the SM.

1.5.1. Acquisition Plan (AP). The AP (Ref: Air Force Materiel Command Federal Acquisition Regulation (FAR) Supplement (AFMCFARS), Subpart 5307.1) is:

- The critical document for communicating this information on individual modification programs
- The principal long range acquisition planning document charting the course of major acquisitions or modifications over their life cycle
- Keyed to the DoD future year defense program

1.5.2. Integrated Modification Management Plan (IMMP). An IMMP is:

- Required for all ACAT III modifications

- A management plan encompassing all key functional areas and identifying the core documentation necessary for program management, execution, and oversight.
- For more complex modifications, some of the documents required may include a separate Acquisition Program Baseline (APB) or tailored Defense Acquisition Executive Summary (DAES)

1.5.3. APB. An acquisition program will establish an APB to:

- Document the cost, schedule, and performance objectives and thresholds of that program beginning at program initiation
- Establish a reference point for measuring and reporting program implementation status to the appropriate MDA
- Describe what will be done, when and for how much, while establishing a commitment among the SM, Program Executive Officer/Designated Acquisition Commander (PEO/DAC), and the Air Force Acquisition Executive (AFAE)
- Serve as the basis for accountability of the SM and the PEO/DAC

1.5.4. DAES. The DAES tailored for a modification program:

- Is prepared by the SM
- Highlights both potential and actual program problems to the USD(A&T) before they become significant
- Succinctly highlights the status of a program and its readiness to proceed into the next phase of the acquisition cycle
- At a minimum, reports program assessments, unit cost, current estimates of APB parameters, status of exit criteria and vulnerability assessments.
- DAES data will be consistent with that in the latest Acquisition Decision Memorandum (ADM) and APB, and other mandatory or approved program documentation
- Not applicable to ACAT IA programs

**1.6. Key Players In The Modification Process.**

1.6.1. Assistant Secretary of the Air Force for Acquisition (SAF/AQ):

- Establishes modification policy
- Provides direction for all acquisition programs through the appropriate PEO or DAC
- Issues Program Management Directives (PMDs) for all acquisition programs
- The service acquisition executive and SAF/AQ staff interact with SMs and other IWSM players to resolve major program issues and guide acquisition investment decisions
- Plans and implements nondevelopmental acquisitions and cooperative research and development (R&D) with other nations
- Is the source selection authority for (ACAT) I and selected programs, unless otherwise directed by the Secretary of Defense or the Secretary of the Air Force
- Nominates candidates to the SAF for PEOs and SPDs for ACAT I, and other selected programs (with advice from the Chief of Staff of the Air Force)

- Acquisition programs' interface with Congress, OSD, and the other services/agencies, and other offices within the air staff

1.6.2. Headquarters, United States Air Force (HQ USAF)/IL (Installations and Logistics):

- Establishes weapon system support policy
- Grants weapon system specific waivers to modification policy (i.e.: modifying more than five aircraft for a temporary modification)
- Manages and advocates sustainment funding requirements that support Program Objective Memorandum (POM), Budget Estimate Submission (BES) and President's Budget (PB) preparation
- Works directly with SMs, PEOs/DACs, and AFMC to resolve issues concerning individual weapon system requirements and sustainment problems
- Coordinates policy and taskings with SAF/AQ to eliminate conflicting and duplicative guidance and overlapping taskings

1.6.3. AFMC. Supports the SMs by providing technical assistance, infrastructure, test capabilities, laboratory support, professional education, training and development, and all other aspects of support for AFAE, PEO, DAC, and SM functions.

1.6.4. AFMC Commander (AFMC/CC):

- Is responsible and accountable under Chief of Staff of the Air Forces' authority for sustainment of Air Force systems
- Is the CEO for Air Force depot maintenance and inventory management activities
- Advises and assists the AFAE through formal and informal channels
- Establishes, with the AFAE and HQ USAF/IL, a process to satisfy command infrastructure requirements and advocates during POM preparation
- Supports the centers by providing manpower and facilities

1.6.5. Headquarters, Air Force Materiel Command (HQ AFMC) Staff:

- Develops and maintains command policy and procedures
- Implements seamless cradle to grave management philosophy and processes to acquire, evolve, and sustain weapon systems and product/materiel groups
- Assigns missions to AFMC organizations
- Provides assistance to the SMs and product directors
- Organizes, trains, equips, and provides a command infrastructure to support organizations that manage weapon systems and product/materiel groups
- Facilitates the establishment of sustainment processes to address requirements and associated funding

1.6.6. AFMC Product and Logistics Center Commanders:

- Serve as the DAC for all acquisition programs assigned
- Establish and maintains a System Program Office to manage each assigned weapon system or product group

- Support SMs and product directors located at their centers
- Provide resources (e.g., manpower and personnel) and core processes required to conduct the business activities required by each program
- Ensure center staff assists SMs directly or through a matrix organizational structure
- Air Logistic Center (ALC) commanders are responsible and accountable under the CSAF's and AFMC/CC's authority for sustainment and continued readiness for the adequacy and effectiveness of sustainment resources
- Ensure product directors and PGMs at their centers provide appropriate support to SPDs
- Each ALC/CD will serve as the Chief Operations Officer (COO) for Depot Maintenance Activity Group/Supply Management Activity Group (DMAG/SMAG) activities

1.6.7. PEO/DAC:

- Manages acquisition program costs and scheduling to meet all performance requirements within approved baselines, program direction, and acquisition strategy
- Directs all SMs, emphasizing planning, reporting, and preparing for milestone and other program reviews
- Participates with program offices to maintain a continuous dialogue with the using and supporting commands
- Working through AFMC, provides facilities, personnel, and resources for program offices and validates infrastructure investment requirements identified by SPDs
- Makes sure that program office correspondence and presentations are accurate, timely, and of high quality. Reviews and approves important program documents (for example, APB, Selected Acquisition Report (SAR), DAES for higher authorities and budget option exercises

1.6.8. SM:

- The SM, under the IWSM architecture, responsible for the life cycle management of a system or commodity
- The program manager vested with full authority, responsibility, and resources to execute approved acquisition and modification programs on behalf of the Air Force
- The single face to the MAJCOM and international customers
- Accountable to the PEO or the DAC, for acquisition related matters

1.6.9. Security Assistance Program Manager (SAPM):

- Normally assigned to the organization with the predominant implementation responsibilities
- Responsible for letter of request (LOR) evaluation, obtaining letter of offer and acceptance (LOA) data (LOAD), and program execution and implementation as set forth in the International Programming Directive (IPD) or PMD

**Table 1.2. Modification Documentation.**

| TITLE | INITIATED BY | PURPOSE | FREQUENCY | REFERENCE |
|---|---|---|---|---|
| ADM | MDA Staff | Provides the decision of the MDA | Prior to each milestone | DoD 5000.2-R |
| APB | SM | Identify Cost, Schedule, Performance Parameters. Describes what will be done, when and for how much. It establishes a commitment between the SPD and PEO/DAC. | Milestone I with updates prior to each milestone | DoD 5000.2-R |
| AF Form 1067, **Modification Proposal and the Mission Need Statement** | MAJCOM/ SM | Initiates T-1 and low cost MODs or highlights a problem which could result in a permanent MOD | Milestone 0 | AFI 10-601 |
| AF Form 3525, **Modification Requirements And Approval Document** | SM | Documents MAJCOM actions and program approval/ disapproval. | Milestone I, updates as required | TO 00-5-15 |
| Command MOD Prioritized List | MAJCOM | Shows MOD priorities for resource allocation decisions. | Pre-POM Pre-BES Pre-PB | --- |
| Computer Resources Life Cycle Management Plan | SM | Provides authority for approval and change accomplishment to computer software. | Milestone I | --- |

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|---|---|---|---|---|
| Cost and Operational Effectiveness Analysis | AFAE | Provides an analytical basis to support the MOD and decision reviews. It is mandatory for ACAT I, II programs. | Milestones I and II. Updates for Milestones III if required. | AFI 10-601 |
| Development, Test, and Evaluation (DT&E) | AFOTEC | Provides the results of developmental test and evaluation. (Includes Live Fire test results.) | Milestones II and III | AFI 99-101 |
| Justification and Approval (J&A) | SM/Contracting Officer | Documents J&A of procurement using less than full and open competition. | Prior to contract award | far-site.hill.af.mil/reghtml/afmc-fars/afmc06.htm |
| Life Cycle Cost Estimate | PEO/DAC | Determines the acquisition MOD program baseline cost estimate and affordability of the MOD. | Milestone I with updates for each milestone thereof | DoD 5000.2-R |
| Mission Need Statement (MNS) | MAJCOM | Documents an operational deficiency that requires a materiel solution. | Pre-milestone 0 | DoD 5000.2-R AFI 10-601 |
| Operational Requirements Document (ORD) | MAJCOM | Identifies minimum acceptable performance requirements and documents changes/ tradeoffs in requirements, funding, etc. | For each milestone beginning with Milestone I | DoD 5000.2-R, Appendix II AFI 10-601 |
| P3A | HQ USAF and SM | Displays MOD detail funding data. | Updated by SM | --- |

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|---|---|---|---|---|
| PMD | SAF/AQ | Directs MOD responsibilities to the appropriate MAJCOM and PEO/DAC for specific system/subsystem development. | Milestone 0 | DoD 5000.2-R |
| Requirements Correlation Matrix (RCM) | MAJCOM | Subset of the ORD. Tracks and displays essential user needs and requirements over MOD life cycle. | --- | AFI 10-601 |
| Test and Evaluation Master Plan (TEMP) | SM | Documents the overall structure and objectives of test and evaluation program. | Milestone I and updates prior to each milestone thereafter | DoD 5000.2-R |
| TCTO | SM | To direct user compliance within specified time limits for modification installation requirements. (Note: necessary for all mods to operational weapon systems.) | Prior to Milestone III | TO 00-5-15 AFMCI 21-301 AFMCMAN 21-1 |
| SAMG | SM | A single condensed planning document that documents acquisition strategy and systems engineering information and test and evaluation strategy. | Changes as a program changes or progresses. | afmc.wpafb.af.mil/ HQ-AFMC/DR/ dri-home samp.htm |

## Chapter 2

## DOD ACQUISITION INITIATIVES

**2.1. General.** Effective communication is the cornerstone of the Air Force's relationship with industry and should be encouraged and maintained from the start of the requirements process through the delivery and sustainment of the end item. The overarching theme of Air Force policy on industry involvement is openness and fairness, consistent with protection of the public trust through the judicious safeguarding of proprietary and classified information. Bringing the user and industry together as early as possible in the acquisition process will foster a better understanding of mission deficiencies and what might be done to eliminate them.

2.1.1. The benefits of enhanced communication between the Air Force and industry is highlighted in policy and initiatives such as:

- Cost as an independent variable (CAIV)
- Market research
- Performance Based Acquisition
- Single Process Initiative (SPI)
- Business Areas

**2.2. CAIV.** Under the concept known as CAIV, once the system performance and objective cost are decided (on the basis of cost performance tradeoffs), the acquisition process will make cost more of a constraint, and less of a variable, while none the less obtaining the needed military capability of the system. The goal of CAIV is to acquire not necessarily the least cost system, but one that meets the essential performance requirements in a best value construct.

2.2.1. This strategy entails setting *aggressive,* realistic cost objectives for acquiring defense systems, and managing risks to obtain those objectives. Cost objectives must balance mission needs with projected out year resources, taking into account existing technology as well as high confidence maturation of new technologies.

2.2.2. The best time to reduce life cycle costs is early in the acquisition process, and cost performance tradeoff analyses must be conducted before an acquisition approach is finalized. However, because external parameters change and program realities evolve, cost performance tradeoffs must occur throughout the acquisition process. Life cycle cost objectives should be incorporated in program requirement documents, RFPs, contract provisions, and the source selection process.

2.2.3. A key tenet of the CAIV approach is a far stronger *user* role in the process through participation in setting and adjusting program goals throughout the program, particularly in the cost performance tradeoff process. The CAIV approach formalizes the process for cost performance tradeoff and better connects the user, supporter and developer to facilitate effective tradeoffs, arriving at an affordable balance among performance and schedule. These tradeoffs in fact have the potential to empower the user to make choices that provide the best performance for the money for each system, thereby helping to ensure maximum benefit from all systems across the force within the resources available. The term trade space, as used below, is defined as the range between threshold and objective performance requirements level identified by the Government.

2.2.4. CAIV means cost is in the trade space, it can be traded for:

- Requirements verification (Mil Stds, Specs)
- Performance (backing off that last 2%)
- Schedule (accelerating or decelerating)

2.2.5. For CAIV to be effectively applied, it is essential prospective offerors understand the "trade space" available within which they can formulate their various approaches to making cost and technical tradeoffs. Only through continuous and open communication with the government can a contractor truly understand exactly what that trade space is.

**2.3. Market Research.** Market research is now required by 10 USC 2377 and FAR Part 10 to be conducted prior to development of new specifications. Market Research provides information on technologies, existing products, varying levels of product performance and quality, commercial practices, support capabilities, and industrial capabilities. Think of market research as the sum of two interrelated processes: market surveillance and market investigation.

2.3.1. Market Surveillance:

- Is the continuing effort by acquisition and development activities (including laboratories) to remain abreast of advances, changes, and trends within their commodity areas
- Provides a knowledge base for determining whether technology and products may be available to meet military needs as expressed in operational requirements
- Provides a broad knowledge of the potential for the use of commercial and nondevelopmental items (NDIs) to fill a DoD requirement

2.3.1.1. Acquisition personnel should use this knowledge of the market to develop and modify operational requirements, creating greater opportunity for NDI acquisitions. However, more specific, detailed information from the marketplace must generally be obtained before a final decision can be made, not only from an operational performance perspective, but also considering reliability, supportability, cost effectiveness, safety, manpower, and personnel.

2.3.2. Market Investigation:

- Is a more specific market research response focused to a specific requirement
- Is the central activity in evaluating the availability of commercial and nondevelopmental items before an initial milestone review decision or before drafting a product description, such as a commercial item description
- Provides the basis for:
  - Finalizing the operational requirement
  - Developing a product description
  - Determining logistics support requirements
  - Determining what additional testing is required.

2.3.2.1. Conduct the market investigation early in the acquisition process to take advantage of the greater flexibility of the requirement early on. Make the market investigation a team effort. Include on the team, as applicable, representatives from engineering, logistics, testing (developmental and operational), and contracting, and include the user.

2.3.2.2. You should document the scope and results of the market investigation in the tailored DAES, which describes the consideration of commercial and other NDI alternatives, at Milestones I and II. For acquisitions that do not require this summary, document the market investigation results in the product description file.

**2.4. Performance Based Acquisition.** In the new performance based environment, acquisition requirements are stated in performance terms rather than design specific procedures, facilitating removal of most military specifications and standards. Solicitations emphasize industry proposing methods to meet performance requirements and performance specifications are the preferred choice for all procurements. Nongovernment standards are used when performance specifications are not practical and MIL SPECS will be used only as a last resort and with appropriate waivers unless exempted. Traditional "build to print" technical data packages developed by functional "stovepipes" are replaced with performance specifications developed and managed by integrated product development teams composed of users, testers, materiel developers, and industry.

2.4.1. The SM's objective should be to control only the necessary performance specification giving industry freedom for design innovation. Cohesive statements of work or statements of objectives are used that specify "what" and not "how". The SM will streamline all acquisitions so that the acquisitions contain only those requirements that are essential and cost effective. Contract data requirements will be limited to those essential for effective control and insight of a program. Acquisition process requirements will be tailored to meet the specific needs of individual programs. Relief or exemption will be sought for those requirements that fail to add value, are not essential, or are not cost effective. Early industry involvement in the acquisition effort, consistent with the Federal Acquisition Streamlining Act, will be encouraged taking advantage of industry expertise to improve the acquisition strategy. Foreign sources and international cooperative developments/procurements will be used where advantageous and within limitations of the law DOD FAR Supplement ((DFARS) Part 225).

**2.5. SPI.** The SPI provides a mechanism for implementing acquisition reform on existing contracts and has proven effective to improve contractor operations and reduce contract cost. Designed to reduce costs associated with doing business with the Government, SPI provides a streamlined process to change from multiple contract requirements in a contractor facility to a single, facility wide process. The new single process could be based on performance requirements, commercial specification and standards, company/ industry processes, or best commercial practices. Single processes are implemented through contract block changes to all affected contracts in the contractor's facility. Once a contractor has an approved SPI process, the contractor may then use the approved SPI process on future contract work, absent a specific determination to the contrary by the head of the contracting activity or PEO level per DFARS 211.273, "*Substitutions for military or Federal specifications and standards.*"

2.5.1. SPI gives contractors the ability to move to the more efficient business and manufacturing processes for their individual facilities and the products they produce. SPI is aimed at instituting the use of commercial processes and industry wide best practices and technologies. The focus is to allow contractors to use common processes in a facility for similar requirements when the process meets performance requirements and makes good business sense. With this initiative, DoD encouraged contractors to submit proposals for using common processes facility wide to reduce contractor operating costs and achieve program cost, schedule, and performance benefits.

2.5.2. The initiative enables contractors to propose use of single processes that meet the needs of multiple Government customers. This eliminates duplicative contractor systems and processes imposed

by each customer's requirements. The initiative is intended to reduce contractor costs, improve process efficiencies, reduce product costs, and improve product quality.

2.5.3. SPI calls for contractors to voluntarily submit proposals for facility wide processes. The USD(A&T) guidance memorandum outlines a nominal 120 day block change process for development, review and negotiation of these proposals. The process is built on existing structures within the components and OSD and is designed to create a sense of urgency in the approval process for streamlining of specifications, standards or other processes.

2.5.4. The 120 day block change process has three basic steps.

- Step One is the identification of proposed common processes that are candidates for implementation across the contractor's facility. These proposed common processes are documented in "Concept Papers" which are brought before the local SPI Management Council.
- Step Two is the joint evaluation and approval of these Concept Papers by the Management Council with agreement of affected programs.
- Step Three is the execution of a Block change modification to implement the approved processes across all applicable contracts.

2.5.5. Per SPI guidelines, the Management Council should have buying office members that represent at least 80% of the facility customer base. Each component with significant business at the facility is also required to provide a Component Team Leader. Air Force buying offices should get involved as early as practical in Management Council deliberations and work with the assigned Air Force Component Team Leader to help expedite the 120 day block change process."

**2.6. Business Areas.** The goal of the business areas is to shift from a focus on budget or input management to one of cost or output management. The leaders in this command, including the SMs, should view themselves as cost managers, not budget managers. There is a big difference between the two. Budget managers focus on inputs while cost managers focus on outputs and, specifically, on the cost per unit of output. The goal is for AFMC to continue to perform the mission well, but at a reduced cost. To promote these objectives, eight business areas have been established in the command: Product Support, Information Services, Science and Technology, Supply Management, Depot Maintenance, Installations and Support, Test and Evaluation, Information Management. Each has a business plan, a balance sheet, net operating results, and a statement of sources and uses of cash. The mission must come first, and in order to accomplish that mission, AFMC must increase performance while controlling costs.

2.6.1. Product Support Business Area and the SM**.** The Product Support Business Area (PSBA) is the largest business area within AFMC, representing almost half of the command's budget. All of the Air Force's weapon system programs, both classified and unclassified, are managed within this business area. The principles of IWSM remain and are now completely contained within the PSBA. The vision of the PSBA is to fully understand the costs associated with the business area products and over time reduce these costs so that more of the Air Force's Total Obligation Authority (TOA) can be used to invest in weapon systems for our paying customers. The products of the PSBA include such things as investment plans, requests for proposals, contracts, costs estimates, technical orders (TOs), supply support requests, deficiency reports (DR), budgets, test plans, warranties, and ultimately weapon systems. Below is a top-level description of this business area that covers all activities associated with AFMC's life cycle management of warfighting systems.

2.6.1.1. Business Area Management. Occurs at the command and center level. It involves the management and continual improvement of the people, processes, and infrastructure employed to manage AF warfighting systems. It includes resource allocation; assessment through performance indicators; knowledge management through policy, practices, and tools; and providing a conduit for business area issues/concerns. Examples include the determination and setting of professional development requirements; and improvements to contracting, financial, or engineering processes.

2.6.1.2. General Support (Administrative). Occurs at three levels: corporate (command), center, and program office. It includes the administrative activities that are necessary to operate and manage an organization. Examples include administrative planning, development and implementation of new management practices, value chain analysis and performance metrics; management of contractor support; planning, conducting and attending activities focused on improving morale, supporting community involvement; developing and/or attending training sessions; and providing advice and counsel.

2.6.1.3. Product Line Management. Center level cross-cutting activities for a specific product line (aeronautical, air armament, space and missile, or command/control). It involves the continuous evaluation and evolution of the product line in direct support of Air Force core competencies and cognizance of industrial sector business practices, competitive environment, and long-term viability. Specific tasks include monitoring system safety, integrity, effectiveness, and affordability to identify common problems or technology needs/ opportunities; and assessing operational performance of these systems.

2.6.1.4. Product Planning. The work of the SPDs, PGMs, and (to some degree) MGMs to identify and prepare specific material solutions for investment. This includes managing advanced concept technology demonstrations; PD&RR programs; developing a set of safety, R&M or capability enhancing modifications for a specific warfighting system; and developing program group or materiel group shared requirements or common solutions that cross warfighting systems, platforms, MAJCOMs, and other DoD and other FMS users.

2.6.1.5. Product Investment. The work of the SPDs, PGMs, and (to some degree) MGMs to introduce new systems into the inventory or modify existing systems to add capability, fix safety-related problems, or improve R&M. It involves not only the warfighting systems themselves but also the integrated logistics support (ILS) for new or modified logistics infrastructure to support it. In general, the purpose of this activity is to define the right technical characteristics of the product, select an acceptable and best value source, and then enforce the interests of the government during contract execution.

2.6.1.6. Product Field Support. The work of the SPDs, PGMs, and MGMs to maintain operational readiness and performance levels of fielded warfighting systems through execution of necessary technical and management functions. It involves contracts and agreements with supply and maintenance providers. The purpose of this activity is to ensure the continuing technical integrity of fielded systems through lifetime technical and management support.

2.6.2. PSBA and SMBA Relationship Within a System Program Office. The relationship between the Product Support Business Area and the Supply Management Business Area within a System Program Office is described as follows: The PSBA deals in the areas of general support, product planning, product investment and product field support, while the Supply Management Chain is responsible for item planning, item investment and item field support. The Product Support Business

Area is aligned with the PEO/DAC chain and the Supply Management Business Area is aligned with the ALC chain. SMs must clearly define the roles, responsibilities, and relationships between both business areas within their CONOPS in order to achieve program success! In accordance with the dual business area concept, the responsibilities of System Supply Manager (SSM) have changed. In the past, SSMs have acted in a dual role capacity as both the SSM and the Supply Chain Manager. However, these roles are distinctly separate under the product support business approach. The Supply Management Business Area is now divested from the Product Support Business Area and SSMs are no longer dual hatted. SSMs will remain in the SPO and be based at the ALC.

## Chapter 3

## MODIFICATION IDENTIFICATION AND REQUIREMENTS

**3.1. Sources For Reporting Deficiencies And Problems.** To accomplish a modification there must be a documented requirement. The using commands identify requirements through the processes described in AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures*, for all ACATs. Materiel deficiencies are reported to the SPD in accordance with TO 00-35D-54, *USAF Material Deficiency Reporting and Investigating System*, and AFI 21-118, *Improving Aerospace Equipment R&M*. The purpose of DR is to identify, report, and resolve deficiencies on hardware, software, and vehicles. Identified below are the various potential sources for reporting perceived or real deficiencies, problem areas, and proposals, that the logistics community must review, analyze, and resolve. One alternative for resolution is the generation of a modification; however, the majority of reported deficiencies and problems are resolved by use of preferred spares, buying new items, maintenance actions or changing a TO.

3.1.1. Mishap Report. A mishap may be described as an unplanned or unsought event or series of events, that results in death, injury, occupational illness, or damage to or loss of equipment or property. AFI 91-204, *Safety Investigations and Reporting*, gives procedures for investigating and reporting all US Air Force mishaps.

3.1.2. Category I DR (Cat I DR). In accordance with TO 00-35D-54, *USAF Deficiency Reporting and Investigating System*, a CAT I DR is correspondence initiated by using commands that identifies a deficiency which:

- If uncorrected, would cause death, severe injury, or severe occupational illness; or
- If uncorrected, would cause major loss or damage to equipment or a weapon system; or
- Directly restricts the combat readiness capabilities of the using organization.
- Use criteria from AFI 91-204.

3.1.3. Category II DR (Cat II DR). A reported deficiency, in accordance with TO 00-35D-54 that:

- Is received from using commands which does not meet the criteria of Category I, but will cause failure of, or prevent the use of an item
- Is attributable to errors in workmanship, nonconformance to specifications, drawing standards or other technical requirements
- Is required for tracking by agreement of the SM and the using command DR Point of Contact
- Identifies a problem for potential improvement through the following forums: Product Improvement Working Group (PIWG) or Vehicle Improvement Working Group
- Identifies a potential enhancement (applies to enhancements noted during the acquisition/sustainment cycle).

3.1.3.1. This report is used for analysis to determine the cause of failure and what is required to correct the deficiency. Corrective actions may or may not require a modification.

3.1.4. AF Form 1000, **Innovative Development Through Employee Awareness (IDEA).** A specific suggested improvement made by Government personnel using the Air Force IDEA program in accordance with AFI 38-401, *The Air Force Innovative Development Through Employee Awareness (IDEA) Program.*

3.1.5. Unsolicited Proposals. A written proposal for a new or innovative idea that is submitted to an agency on the initiative of the offeror for the purpose of obtaining a contract. These proposals are normally received by the contracting office and evaluated by the appropriate requirements office. If an unsolicited proposal is not received through the contracting office, ensure that they receive a copy.

3.1.6. DOD/Other Agencies Modification Proposals. These are proposals identifying a materiel improvement to jointly used systems/equipment. They are one basis for establishing an evaluation effort for possible implementation on Air Force equipment.

3.1.7. High Demand Rates. Higher than normal demands on the supply system for replacement of failed equipment that are reported by Item Management Specialists to Equipment Specialists for evaluation to determine cause of failure and corrective action. Corrective actions may or may not require a modification.

3.1.8. Analytical Condition Inspection (ACI). Inspection performed by a Depot/Contractor in accordance with AFMCI 21-102, *Analytical Condition Inspection Programs* to uncover defects that may not be detected through normal inspection programs. The purpose of the ACI is to accumulate data for engineering and technical evaluations of the relative conditions of the total Mission Design Series of the aircraft.

3.1.9. Aircraft Structural Integrity Program (ASIP). A time phased set of required actions, that are performed at optimum times during the life cycle of an aircraft system to monitor and ensure the structural integrity (strength and longevity) of the aircraft structure throughout the operational life of the weapon system in accordance with AFI 63-1001, *Aircraft Structural Integrity Program*. Data from this program are used to identify possible deficiencies and potential failures that may or may not result in a modification.

3.1.10. AFTO Form 22, **Technical Order System Publication Improvement Report And Reply**.. A recommendation submitted by Using Commands in accordance with TO 00-5-1, *Air Force Technical Order System*, for a specific TO improvement, correction of an error, or omission of a technical nature that prevents the adequate performance of functions required for mission accomplishments. During evaluation of an AFTO Form 22, a materiel deficiency may be determined to be the cause of the problem instead of a TO error.

3.1.11. PIWG. Guidance and procedures for the PIWG are provided in AFI 21-118, *Improving Aerospace Equipment R&M*. The PIWG:

- Brings together parties who oversee product performance and product maintenance
- Ensures SMs understand the equipment user's knowledge and experience in the operational environment
- Lets the customer and SM work together to resolve aerospace deficiencies.

3.1.12. Materiel Improvement Project (MIP). A systematic process of recording, tracking, controlling, and providing feedback of technical and administrative actions on apparent or suspected materiel deficiencies on operational system, equipment, associated computer programs, and munitions.

3.1.13. MNS. A formal document used to identify a deficiency, (operational, logistical, reliability) and/or state the need for a new or improved capability that will cost $65 million or more for USAF forces. (AFI 10-601, *Mission Needs and Operational Requirements Guidance and Procedures.*)

3.1.14. AF Form 1067. MAJCOM field-level personnel submit AF Form 1067s in response to maintenance or operational problems being experienced by the field or as ideas for improving maintenance or operational tasks being performed at field-level. This form will be initiated by the MAJCOMs and approved by the SM.

3.1.15. Establishing the Modification Project. SM personnel receive reports of deficiencies and/or problems by one of the methods described above. The reported deficiency/problem is the basis for SM personnel to establish the MIP. They then completely analyze the deficiency or problem and recommend a solution. When the recommended solution is a modification, SM personnel submit an AF Form 1067 to the MAJCOM for approval of the proposed modification under $65M.

**3.2. Classes Of Modifications.** All modification class programs provide the United States Air Force a way to correct deficiencies in, or to improve the capabilities of, existing equipment/systems in lieu of new weapon system development programs. It is essential that planning be started as soon as possible after the decision is made to perform any of the three classes of modifications. The three classes are:

3.2.1. Temporary-1 (T-1). These modifications temporarily change, add, or remove equipment to provide increased capability for a special mission. T-1 modifications cannot be on a system for more than one year without approval from HQ USAF.

3.2.2. Temporary-2 (T-2). These modifications are required to support research, development, test, and evaluate as a part of an approved acquisition program. Unless a permanent modification has been initiated the modified items should be returned to their original configuration immediately after test completion. Refer to AFMCI 21-126 for demodification of test aircraft.

3.2.3. Permanent. These modifications make permanent changes to correct safety or materiel deficiencies, to improve R&M, or to add, increase, or remove capability. They may also be retrofits to systems that were produced before the approved change was incorporated into the production line. The (S) is a suffix used with the four digit modification number to identify Safety Modifications. Safety mods correct materiel or other deficiencies that could endanger the safety of personnel or cause loss or damage to equipment. No other distinction is made within this category or class of modification programs.

**3.3.** Modifications For Security Assistance Systems. USAF policy encourages Security Assistance customers to participate in our modification programs to maintain their equipment in a safe condition and, where applicable, in a configuration compatible with USAF equipment.

3.3.1. Temporary Modifications. The application and control of T-1 and T-2 mods normally do not apply to Security Assistance customers under the Foreign Military Financing Program (FMFP) or FMS.

3.3.2. Permanent Modifications:

- Air Force controls permanent modifications.
- Country requests for all permanent modifications should be evaluated for releasability before acquisition activity.
- FMFP and FMS customers obtain permanent modifications according to the guidelines in Modification Planning and Management directive and AFMAN 16-101.

- Permanent modifications for Security Assistance systems and equipment are developed and prescribed assuming that the recipient country has its own capability to install the modifications.

3.3.3. Indigenous Modifications. Indigenous modifications include those designed, developed, engineered, and accomplished under the sole auspices of a Security Assistance Country without Air Force technical approval. The modification should not degrade structural integrity. SAF/IA gives specific authority for intended indigenous permanent modifications to FMFP equipment. SAF/IA evaluates the proposed modifications to ensure that:

- They do not alter the Security Assistance program force objectives for which the system or equipment is assigned
- They are feasible and compatible with the equipment to be modified
- The recipient country bears all costs incidental to the modification
- The USAF is advised of any permanent mods under consideration by the country, so the intentions may be reviewed to ensure that no conflict in planning exists
- The USAF knows the modified equipment's configuration

## Chapter 4

## THE MODIFICATION AUTHORIZATION PROCESS

**4.1. The Modification Process.** The basic steps in the Modification Process once a design change has been identified are:

- Plan and Program for Modification
- Define Corrective Action
- Prepare Budget Schedules
- Submit Modification For Approval
- Execute the Modification.

**4.2. Plan And Program For Modification.** Milestone I approval marks the official beginning for a new modification as an acquisition program. Planning and Programming for a modification starts with establishing a modification which begins with a requirement and proposed solution submitted from the MAJCOM or proposal of a solution to deficiency generated through means outlined in Chapter 3.

4.2.1. Things that must be planned for in the modification process include:

- Funds
- Maintenance Concept
- Support equipment qualifications
- Spares, to include peacetime operating spares, and Readiness Spares Packages
- Software
- Manpower, personnel, training, and training systems
- Risk and hazard analysis
- Trial installation and kit proof kits
- Installation
- Weapon system operational availability
- Test and Evaluation requirements
- Technical data
- Product security requirements
- Structural integrity.

4.2.2. Modification planning should result in the development of a broad long range investment plan for mods. The purpose of the long range plan is to reflect the projected modernization and investment requirements.

4.2.3. Modification priorities should be part of any plan and reflect the priorities of the MAJCOM. The plan should be comprehensive and time phased, address the major subsystems of the weapons system, and be coordinated with the MAJCOMs. It then serves as a tool for integrating and scheduling future mods.

4.2.4. Programming links policies, strategies, and objectives to major programs, including modification programs. MAJCOMs base their programming activities on the Defense Planning Guidance (DPG) and on updated out year fiscal projections. Programming responsibilities are described in the POM. SMs provide modification financial and scheduling data to the MAJCOMs for their POM inputs.

**4.3. Define Corrective Action.** Activities undertaken during the determination of the mission need phase are designed to determine the corrective action required for a fix. At Milestone 0, a determination is made regarding the study of alternative concepts. An analysis of alternatives is part of the CAIV process and will be prepared and considered at appropriate milestone decision reviews of ACAT I programs, beginning with program initiation (usually Milestone I). For ACAT IA programs, an analysis of alternatives will be prepared for consideration at Milestone 0.

4.3.1. Although concept studies have been accomplished in Phase 0 and a modification has been selected as the solution to the materiel deficiency or requirement for a new or enhanced capability, final engineering of that modification has seldom been made at this point. The engineering decisions should be made taking into consideration alternative material concepts and solutions. This ensures that the modification is engineered in a way to most effectively, considering both mission and cost, satisfy the validated users needs.

4.3.2. These analyses are intended to aid and document decision making by illuminating the risk, uncertainty, and the relative advantages and disadvantages of the alternatives being considered. You should show the sensitivity of each alternative to possible changes in key assumptions (e.g., threat) or variables (e.g., selected performance capabilities).

**4.4. Prepare Budget Schedules.** The SM:

- Is responsible for submitting budget information for mods to the MAJCOM
- Works closely with MAJCOMs to budget and prioritize modification funds lead time away
- Works to ensure the user's highest priorities are executed in the year for which the modification was planned.

4.4.1. Planning for timely modification execution must be done not only for the initial year of funding, but for all years covered by the budget. Modification milestones should be developed so that all options are exercised in a timely manner, preferably in the first quarter of each successive FY. HQ USAF and DoD establish modification funds obligation goals. Funds are tracked in the Central Procurement Accounting System (CPAS).

**4.5. Submit Modification For Approval.** Approved requirements documentation is mandatory for all potential acquisition programs. The primary approving documents for an Air Force modification (for a baselined system) are the AF Form 1067. (Costs are expressed in FY 96 constant dollars.)

- For aircraft related, missile, space, and AFMC supported communications, electronics, and other support system modifications to systems out of production, projected to have a combined estimated cost of more than $10 million, but less than $65 million in total procurement and Research, Development, Test and Evaluation (RDT&E) cost may use an AF Form 1067 to document the mission deficiency or mission need. Per coordinated HQ USAF/XOR, ILM and AQP message, the AF Form 1067 is used in lieu of a MNS and an ORD for the necessary requirements documen-

tation. Air Staff coordination and validation is necessary to ensure proper reprogramming actions are completed. RDT&E costs cannot be more than $14 million of the combined estimated cost.

- For RDT&E only, costs of more than $10 million and less than $14 million may also use an AF Form 1067. An RCM which defines parameters (thresholds and objectives) for the characteristics and or capabilities to be modified will be attached to the AF Form 1067 to complete the requirements documentation. The completed AF Form 1067, RCM, and a transmittal letter identifying intended program funding source must be routed from the MAJCOM requirements principal, to the SM for technical approval, to the appropriate MAJCOM for approval. The coordinated AF Form 1067, RCM, and transmittal letter will then be forwarded to HQ USAF/XOR to initiate the headquarters review process.
- Modification programs estimated to cost less than $10 million (current year dollars) require an AF Form 1067 and will be approved by the MAJCOM initiating the modification.

4.5.1. For modifications projected to cost $65 million or more, a MNS will be developed. The MNS identifies the need to establish a new operational capability, improve existing capabilities, or exploit an opportunity that cannot be satisfied with nonmateriel solutions. This document is used for all materiel acquisition programs, not just major programs, and is developed by the operating MAJCOM.

**4.6. Execute The Modification.** Each Milestone/Phase has key aspects that contribute to the successful execution of the modification program.

- Phase I is initiated when the PMD is issued by SAF/AQ which establishes the program.
- Milestone II approval marks the beginning of the EMD Phase.
- The initial production for modifications is kit proof kits. During Phase II, kit proof kits are manufactured, delivered, and installed and kit proof is performed. Successful accomplishment of kit proof is required for Milestone III approval and modification implementation.
- Milestone III approval certifies that the need for the modification continues to be valid, and the results of the kit proof warrant continuation of the modification program and entry into Phase III.
- Phase III is the final phase of the modification process. It deals with the production and deployment of the modification. Key aspects of Phase III include award of the production options, delivery of kits and associated support data, and fielding of the modification.

**4.7. Program Protection Requirements.** Determine whether the modification adds new elements, classified or unclassified, that require protection to prevent unauthorized disclosure or inadvertent transfer of critical technology or information (See DoD 5000.2-R).

**4.8. Configuration Management Action.** Once the modification is in the POM and the approved Engineering Change Proposal (ECP) or Organic Change Proposal is available, the development of the Configuration Control Board (CCB) package can begin. The CCB package must contain sufficient detail to allow the requested modification to be integrated with all other system/commodity mods. At a minimum, the CCB package should contain:

- TEMP
- DAES
- Acquisition Strategy Development

- Planning Purchase Request (PR) Package
- Statement of Objectives (SOO)
- Contract Data Requirements List (CDRL)
- Sole Source J&A
- AF Form 3525
- P3A

4.8.1. TEMP. The TEMP should be updated to include the proposed modification testing requirements. The major emphasis of modification testing is the interface between the existing system components and the new/modified components of the system. In addition, logistics supportability and maintainability factors are also evaluated during modification testing. For mods of significant size or complexity a separate TEMP might be required.

4.8.2. DAES. The DAES is an internal DoD reporting document, which provides total program execution information not available in other reporting documents. Its management utility lies in the capacity to provide an accurate current appraisal and prediction of total program costs and schedules based upon performance to date. It is designed to provide advance warning of potential and actual program problems before they become significant. The DAES is the principle mechanism for tracking programs between milestone reviews. A DAES report is provided by the SM of a MDAP to the USD(A&T) each calendar quarter. For additional information on the DAES, see paragraph 1.4, Modification Documentation.

4.8.3. Acquisition Strategy Development. The acquisition strategy is normally based on an initial acquisition strategy paper prepared by the SM and reviewed by the ModIPT. This paper will form the basis for the acquisition strategy developed IAW Part 7 of the FAR. The acquisition strategy must at a minimum address key system characteristics and operational constraints, cost, schedule, performance tradeoffs, performance objectives, risks and the management approach to those risks, and contracting methodology.

4.8.4. Planning PR Package. A planning PR is assembled next. It includes a SOO, a CDRL, and a sole source J&A, if appropriate.

- SOO: The SOO identifies what part of the modification is being procured (designed/development, fabrication, test, deployment, kit proof, and installation). The SOOs might be written for a turnkey program that includes all of the above functions related to the Group A Kits, Group B Kits, trial installation, kit proof, and installation or for only one of these functions. Group A Kits are defined as items, parts or provisions permanently or semipermanently installed on a weapon system/end item. Group B Kits are defined as components, when installed or connected with Group A, provide a complete operating installation. Ordinarily, they are remove and replace Line Replacement Units (LRUs), Shop Replacement Units (SRUs) or equipment items. If a modification requires procurement of Group A and Group B Kits from different sources, the management process will become more complicated than in the past. A critical factor in this process is the congressional requirement that kits must be obtained and funded from the same year funds.
- CDRL: A DD Form 1423, **Contract Data Requirements List**, is a list of contract deliverable data requirements that is authorized for a specific modification or acquisition program and made a part of the contract. The involved engineers, equipment specialists, item managers,

etc., provide their CDRL requirements to the SM or Data Manager for inclusion in the PR package in response to a data call. The CDRL is reviewed by the SM to ensure data requirements are clearly identified. After the SM review, the CDRL is reviewed by the Data Manager to ensure proper tailoring of the Data Item Description (DID) has taken place. At this point in the program development, the CDRL package is usually only preliminary.

- Sole Source J&A: If the envisioned modification contract action involves a sole source, a J&A document must be prepared.

4.8.5. AF Form 3525. The AF Form 3525 may be used to document the cost, schedule, support equipment, spares [including Readiness Spares Package], R&M assessment, software, technical data, safety, and other key elements impacted by the modification as required. This form can be used to justify the modification and to present the modification to the CCB for a recommendation or engineering approval/disapproval. The form requires an update to reflect the current status of the modification.

4.8.6. Exhibit P3A, Individual Modification. The P3A will be prepared for all individual modification programs and any program requiring installation funds. The P3A is used to transmit funding information to the MAJCOM. Each modification will be entered on a single P3A. There is an exception for simulator peculiar mods, miscellaneous service bulletins, and low cost mods. For these, a single modification number is assigned, and the requirements are input during the POM cycle.

**4.9. MAJCOM Review/Approval.** Depending on the development of the program, some MAJCOM review/approval requirements may have been identified during CE. If also required for this Phase of the program, you will need to update the existing MAJCOM review/approval requirements. If these requirements were not identified during the previous phase, you will have to initiate new requirements per the following paragraphs.

4.9.1. SMs will work closely with the MAJCOM to obtain all resources required to execute the modification program. Each MAJCOM annually reviews all validated MNSs and approved AF Form 1067s and withdraws those no longer essential or viable as future funding prospects.

4.9.2. The SM will submit all modification proposals to the lead MAJCOM (with copies to other using MAJCOMs). Only modification proposals submitted within the timeframe required for review will be considered for MAJCOM prioritization processes. This ensures proposed modifications have been completely evaluated and reviewed by the MAJCOM. Emergency modification proposals submitted out of the review timeframe will be worked between the SM and lead MAJCOM to arrive at a negotiated position.

4.9.3. Lead MAJCOMs convene modification review panels as necessary to review SM proposed modifications and provide written concurrence/reservations. Modifications must receive lead MAJCOM modification review panel concurrence by 30 June each year to be considered in the current year's prioritization process.

## Chapter 5

## FINANCIAL APPROVAL PROCESS

**5.1. Elements Of The Planning, Programming And Budgeting System (PPBS) (Budget Cycle) Process:**

- Future Year Defense Plan (FYDP)
- POM
- BES

5.1.1. PPBS Budgeting Phase. Budgeting is the final phase of the PPBS cycle. In this phase, the emphasis shifts from determining what programs should be funded to ensuring the approved programs (i.e., the POM as amended by the Program Decision Memorandum (PDM)) are correctly funded. In addition, Office of the Secretary of Defense and Office of Management and Budget must properly support required funds with documentation for review.

5.1.1.1. Preparation of the Services' BES is the first step in the budgeting phase. The BES is a detailed, pricing of the program contained in the POM as modified by the PDM. The BES should not contain newly identified requirements, review of past decisions, or other "creative" programming techniques. The Services submit their BES to OSD in September. The Office of the Secretary of Defense and the Office of Management and Budget review and modify the BES to form the PB baseline which is submitted to Congress the following January. Submission of the PB to Congress concludes the PPBS budgeting phase.

5.1.2. Future Years Defense Program. The FYDP is the official DoD document which summarizes forces and resources associated with programs approved by the Secretary of Defense. The organizations affected are: appropriations accounts (RDT&E, Operations and Maintenance (O&M), etc.) and the 11 major force programs (strategic forces, airlift, R&D, etc.). R&D is Program 06. Under the current PPBS cycle, the FYDP is updated when:

- The services submit their POM’s to the Office of the Secretary of Defense (May/June)
- The services submit their budgets to Office of the Secretary of Defense (Sept)
- The President submits the national budget to the Congress (Feb).

5.1.2.1. The primary data element in the FYDP is the Program Element.

5.1.3. POM. The POM is a biennial memorandum in prescribed format submitted to the Secretary of Defense in May (even years) by the DoD Component Head. The POM recommends the total resource requirements and programs within the parameters of Secretary of Defense's fiscal guidance. It is a major document in the PPBS, ultimately becoming the Service's budget.

5.1.4. BES. The BES is prepared based on the Office of the Secretary of Defense's review of the services POM. Review results are documented in the POM signed by the Secretary of Defense or Deputy Secretary of Defense and distributed to DoD Components. The BES is prepared every two years (even years) and, as necessary, amended in the odd years.

**5.2. Intended Use Of Appropriations Applicable To Mod Programs.** All costs/items may be classified as either expense or investment. Expense costs/items are costs incurred for daily operation and maintenance of a weapons system including consumable spares and repair parts, consumable supplies, labor,

and maintenance. Investment costs/items result in the acquisition of, or addition to, end items that are long life capital type items such as equipment, buildings, weapons systems, support equipment, and reparable spares.

5.2.1. Mod Program Funds Type Table. Modification costs will be budgeted and funded in the proper appropriation and budget programs. Particular emphasis is required for each instance listed below:

- Program Management Administration (PMA) costs which are modification program peculiar will be funded with Central Procurement (CP) funds (57*3010,3020, CAT I/II 3080)
- PMA costs which are common organizational costs will be funded with O&M funds (O&M 57*3400)
- Equipment will be modified with the same appropriation that originally acquired the equipment. For example, equipment acquired using aircraft procurement funds will be modified with aircraft modification funds.
- On programs using RDT&E funds, all engineering (development, design, and integration) will be funded in RDT&E to include all elements of support requiring development (simulators, support equipment, software, etc.).

**5.3. Types Of Funds.**

5.3.1. O&M (3400 Funds). The O&M appropriation is an appropriated, single year, expense type fund. O&M funds are used by every Air Force organization to pay for day to day operational expenses that are not covered by other appropriations. Below is a list of examples of day to day operational expenses and their associated three digit standardized Element of Expense Investment Code (EEIC):

| EEIC | DESCRIPTION |
|---|---|
| 392 | Civilian Pay |
| 409 | Travel Expenses |
| 431 | Vehicle Rental |
| 473 | Communications |
| 521 | Maintenance Facilities Projects |
| 522 | Repair Facility Projects |
| 553 | Contract Education and Training |
| 569 | Operation of Field Printing Plants |
| 609 | Supplies |

5.3.2. CP (30X0 Funds). CP funds are appropriated, multi year, investment funds used to buy weapons systems, modifications, support equipment, initial spares, and some replenishment spares. Air Force CP funds are made up of four appropriations with similar directives, budgeting, and execution processes. The four appropriations that make up the Air Force CP funds are:

- 3010 Aircraft Procurement
- 3011 Ammunition Procurement

- 3020 Missile Procurement
- 3080 Other Procurement

5.3.3. RDT&E (3600 Funds). RDT&E funds support the decision process used to determine what weapon systems will satisfy Air Force operational requirements. RDT&E funds are put to two basic uses:

- The mission program covers work performed under contract with private or Government entities.
- The management and support program includes operation and maintenance of AFMC test and evaluation facilities and laboratories.
- If a determination can not be made to use RDT&E funds or procurement funds, RDT&E funds should be used.

5.3.4. Defense Working Capital Fund (DWCF). The DWCF is a no year working capital fund or revolving fund that is used to:

- Finance support operations in the DoD.
- Finance operations on a businesslike basis with the ALC organizations using the working capital to buy resources.

5.3.4.1. The customers pay for the assets and services, reimbursing the working capital fund. The reimbursements enable the ALCs to fund future operations. With DWCF, the DoD is tying costs of operation to the weapons system that comprise these forces.

5.3.5. Initial Spares. Use the DWCF Materiel Support Division, to finance initial spares. AFMC will reimburse the DWCF from the CP appropriations (3010, 3011, 3020 and 3080) based on delivery of the items to the DWCF. Don't use the DWCF to pay for nonstock listed items, e.g., classified and Contractor Logistics Support (CLS) programs.

5.3.6. Military Construction. The Military Construction (3300) appropriation provides for project planning and design, major and minor construction, support activities, and installed equipment. Normally, minor construction projects costing less than $300,000 are funded with O&M or RDT&E funds.

5.3.7. Foreign Military Funds. The U.S. government has established international logistics programs to help our allies. The International Logistics Program is an instrument of U.S. foreign policy and is directly linked to the National Security Assistance Program. As such, it is controlled by the State Department that determines the weapons systems that will be sold and to whom.

5.3.7.1. International logistics programs include FMS, FMFP, commercial sales, international military education and training (IMET), and economic support which is appropriated U.S. tax dollars by Congress. The country can finance procurement under direct citation procedures or by reimbursements and they can combine money appropriated by Congress with their own funds.

**5.4. Budget Concepts.**

5.4.1. Full Funding. Modifications will be fully funded. Complete kits must be programmed each FY. If it is necessary to procure kits in more than one fiscal program year to comply with phase procurement, then each fiscal program year quantity and dollars must meet the full funding principles. Full funding requires a complete kit of all items necessary to complete a modification. This is because

future appropriations cannot be used for items not shipped in the kit. Full funding also includes installation costs and these costs must be programmed or budgeted with FY funds applicable to the year of installation based on lead time of procurement modification kit delivery. Complete support for that quantity of kits must be programmed lead time away from installation. Complete support includes but is not limited to spares, support equipment, system training devices/simulators, and technical data. The same program year's funds must be used to procure both groups (A and B) to adhere to phased procurement principles.

5.4.2. Phased Procurement. Modifications will be procured on a time phased basis. To determine kit deliveries for each year, start with the contract award date. Next, add the lead time to the contract start to determine when deliveries will begin. Then compare deliveries with the proposed installation schedule. Kit delivery will be based on the installation schedule and procurement should occur lead time away from the installation date.

5.4.3. Reprogramming. Before funds can be transferred from a program, the program must be complete and the funds must be declared excess. However, if a modification is cancelled or reduced in scope/cost, the surplus can be moved to another new modification within the same weapons system. This is certainly the case if the new modification does not exceed $2 million and it is totally funded within a program year.

5.4.4. Cost Estimates. Cost estimates are accomplished to determine the overall program cost. Cost estimates are accomplished by any of the methods detailed in AFPD 65-5, *Cost and Economics*; AFPD 65-6, *Budget*; and AFIs such as AFI 65-601, *Volume I, Budget Guidance and Procedures*. These include determining fair market price for Commercial Off The Shelf (COTS) or NDIs using comparative techniques for similar systems, or expert opinions and studies based on the effort and the technical complexity of the effort. Common sense application and realistic appraisals are essential in development of cost estimates. The key in application is to arrive at a reasonable and acceptable cost estimate to determine the aggregate research, developmental, manufacturing, installation, and sustainment costs (as applicable) to determine the overall costs and where the program falls within the DoD 5000.2-R parameters for acquisition and RDT&E costs. The costs will then be used in conjunction with the risk analysis to determine the appropriate MDA level based on both cost and risk.

5.4.5. Continuing Resolution Authority (CRA). Budget authority resulting from legislation introduced as a joint resolution and enacted by the Congress to provide authority for federal agencies to continue in operation until a specified date or until the regular appropriations are enacted. The CRA usually specifies a maximum rate at which obligations may be incurred based on the rate of the prior year, the PB request, or an appropriation bill passed by either or both Houses of the Congress. Obligations under CRA are usually controlled by apportionment.

## Chapter 6

## CONCEPT EXPLORATION (PART I)

**6.1. General.** During the Mission Area Analysis, it was determined that the need/deficiency can not be satisfied with a nonmateriel solution, such as changes in doctrine or tactics. The need was validated by an AF Form 1067 or MNS and the SM requested authority to move to the next phase of the acquisition process. The MDA initiates the CE phase with approval to move to that phase.

**6.2. The CE Phase.** The focus of the CE phase is to define and evaluate the:

- Feasibility of alternative concepts.
- Basis for assessing the relative merits (i.e.: advantages and disadvantages, degree of risk) of these concepts.

6.2.1. The most promising system concepts will be defined in terms of initial, broad objectives for cost, schedule, performance, software requirements, opportunities for tradeoffs, and test and evaluation strategy.

**6.3. Alternative Solutions Evaluated.** In Phase 0, each of the possible materiel solutions to the mission need/deficiency is explored in depth and the optimum solution is selected for implementation. The selected solution might be the installation of a component based on new technology, or one using improved current technology, etc. You should use the information and knowledge obtained through Market Research to select or develop the optimum solution. Until the decision is made on the materiel solution to be pursed, no design activity may proceed.

6.3.1. Alternatives To Hardware Modification. Modifications are hardware or hardware/software changes to a SRU, LRU, system or subsystem. The modification guidance identifies preferred spares, maintenance and repair actions, or software only changes as alternative actions. The following subsections will help to explain whether an action is a modification or an alternative solution.

6.3.2. Preferred Spares. Preferred spares are improved items that are fit and function compatible with the replaced item. (New or additive capabilities are treated as a permanent modification.) Preferred spares are to be replaced through normal attrition; however, they may be replaced through forced attrition if the following conditions apply:

- The old item is unsupportable or has unacceptable R&M
- The new item offers significant improvement in R&M

6.3.2.1. Use of the improved item results in significant cost savings.

6.3.3. Maintenance And Repair Actions. Maintenance and repair actions are tasks common to normal maintenance practices. Maintenance and repair actions will be used to replace items that have reached their normal useful life.

6.3.4. Software Only Changes. Integration problems can occur with software changes. Therefore, care must be used to ensure any software integration changes to one system or subsystem do not negatively impact another system or subsystem.

6.3.5. Hardware Modification Required. If no alternative action is available other than a physical change to the item, then a modification must be considered. Prior to the start of any engineering, one

must first determine if the end item has sufficient service life remaining to justify performing a physical change to the end item. To initiate a modification, the end item must meet the following criteria:

- To plan, program, and budget a modification, two or more years of programmed life must be forecast to remain after completion of the modification.
- To install a modification, five or more years of programmed life must be forecast to remain after installation.

6.3.5.1. Service life restrictions do not apply to safety mods.

**6.4. Funding Actions.** The SM has authority for the affected weapon system as well as responsibility for implementing mods to that system. Once a modification is funded, the SM, in conjunction with the PEO/DAC, is responsible for funds execution in support of modification programs.

6.4.1. The SM will need to work closely with the MAJCOMs and the PEO/DAC to obtain the resources necessary to execute their programs. Additionally, the SPD will need to interface with SAF/IA and Air Force Security Assistance Center (AFSAC) for funding of FMS system sales through the Security Assistance Management Information System (SAMIS) and the Case Management Control System (CMCS).

6.4.2. Permanent modification funds are handled in accordance with the charter for PEOs/DACs. The PEOs are responsible for managing funds for all programs within their portfolio. DACs have the authority to approve changes on the programs within their control. Expiring year obligation authority for aircraft and missile modification funds between PEO/DAC portfolios is delegated to HQ AFMC. HQ AFMC, in its role as extended staff, will work with SAF/FM/AQ and USAF/IL to develop procedures for expiring year funds.

6.4.3. HQ USAF and OSD establish modification funds obligation goals. Each SM is encouraged to set initiation and commitment goals to meet the established obligation goals. The most current obligation goal is 80 percent of first year funds. This goal may change from year to year.

6.4.4. Reprogramming may be accomplished by the SM within a weapon system below the $10M threshold. Excess funds are normally used to accomplish these reprogramming actions. Thresholds (congressional ceilings) may not be exceeded in a given FY without specific congressional reprogramming notification/approval.

6.4.5. Although modification funds are three year funds, the Congress has always pushed for first year obligation of the funds appropriated for mods. Managers of modification programs are encouraged to target obligations for the first quarter of funding availability.

6.4.6. Unobligated funds are targets for the Office of the Secretary of Defense and congressional cutbacks. On the other hand, funds budgeted before they are needed can result in unobligated funds. When funds cannot be obligated in the FY requested, the funds might be redirected to programs that can obligate them.

6.4.7. At least once a year, the MAJCOMs will hold a modification prioritization conference with the SPD attending. If there are safety issues, a representative from the Air Force Safety Center (AFSC) will be invited. The MAJCOMs will review and prioritize all ongoing and proposed mods by system and end item over a six year period. Safety mods take precedence over all other mods. This action establishes clear user priorities for proposed and ongoing mods. Because of limited funds, not all mods approved by the MAJCOMs will be funded.

**6.5. The Single Acquisition Management Plan (SAMP).** The SAMP is a concise, integrated document that identifies relevant issues, and recommends an acquisition and management approach for a program tailored to the specific needs of the program. The SAMP should be written at a strategic level. There are a number of subtle, but very important ideas that provide the foundation for the development and use of a SAMP. Some of them are:

- The SAMP needs to be developed in an Integrated Process or Product Team (IPT) environment. Because all the program stakeholders participated in the development of the SAMP, it represents a corporate USAF or DoD position on how to best execute and manage a specific program.
- The SAMP is intended to be written at a strategic level to provide a vehicle by which the Air Staff and OSD can provide strategic program guidance, while still leaving the specific implementation of the strategy to the PM and PEO/DAC.
- The SAMP is a forward looking document. It describes the acquisition approach, of how the program office intends to get to contract award, and manage the program after contract award. This concept makes it possible to reduce the amount of acquisition oversight required, and again, decentralizes program execution to the PM and PEO/DAC.
- The discussion in the SAMP is limited to only the information required to adequately describe the overall program strategy or support the requested decision.

6.5.1. SMs are responsible for effectively planning the execution of their program. Unique program circumstances and sound management practices may dictate more detailed planning than appropriate for a SAMP. This planning no longer needs to be formally documented beyond what is included in the SAMP.

6.5.2. The SAMP Guide, available through the SAF/AQ Home Page, describes the use of IPTs to develop SAMPs in an integrated environment. Program Managers can use the IPT to write the SAMP concurrently with the coordination and review process. In this situation, SAF/AQCS will begin the SAMP tracking process upon notification of the formation of a SAMP IPT.

**6.6. MAJCOM Review/Approval.** SMs will work closely with the MAJCOM to obtain all resources required to execute the modification program. Each MAJCOM annually reviews all validated MNSs and approved AF Form 1067s and withdraws those no longer essential or viable as future funding prospects.

6.6.1. The SM will submit all modification proposals for MAJCOM review to the lead MAJCOM (with copies to other using MAJCOMs). Only modification proposals submitted within the timeframe required for review will be considered for MAJCOM prioritization processes. This ensures proposed modifications have been completely evaluated and reviewed by the MAJCOM. Modification proposals submitted out of cycle by the SM or MAJCOMs will be worked between the SM and lead MAJCOM to arrive at a negotiated position.

6.6.2. Lead MAJCOMs convene the modification review panel as necessary to review SM proposed modifications and provide written concurrence/reservations to the SM. Modifications must receive lead MAJCOM modification review panel concurrence by 30 June each year to be considered in the current year's prioritization process.

# Chapter 7

# CONCEPT EXPLORATION (PART II)

## 7.1. Milestone I Review.

7.1.1. Milestone I Decision Objectives. The purpose of the Milestone I decision point is to:

- Determine if the results of Phase 0 warrant establishing a new acquisition program
- Approve entry into Phase I, PD&RR.
- At Milestone I, the MDA will approve the following:
  - Acquisition Strategy
  - APB (10 USC ß 2435), for ACAT I
  - Phase I Exit Criteria.

7.1.2. Acquisition Strategy. Each SM will develop and document an acquisition strategy that will serve as the roadmap for program execution from program initiation through post production support. A primary goal in developing an acquisition strategy will be to minimize the time and cost of satisfying an identified, validated need, consistent with common sense and sound business practices. The acquisition strategy will evolve through an iterative process and become increasingly more definitive in describing the relationship of the essential elements of a program.

7.1.2.1. Essential elements in this context include, but are not limited to:

- Sources
- Risk management
- CAIV
- Contract approach
- Management approach
- Environmental considerations
- Source of support
- Security considerations
- Other major initiatives that are critical to the success of the program.

7.1.2.2. The acquisition strategy will be tailored to meet the specific needs of individual programs, including consideration of incremental (block) development and fielding strategies. The benefits and risks associated with reducing lead time through concurrency will be specifically addressed in tailoring the acquisition strategy. In addition, in tailoring an acquisition strategy, the SM will address the management requirements imposed on the contractor(s).

7.1.2.3. The SM will initially develop the acquisition strategy at program initiation (usually Milestone I), and will keep the strategy current by updating it whenever there is a change to the approved acquisition strategy or as the system approach and program elements are better defined. The MDA will approve the acquisition strategy prior to release of the formal solicitation. This approval usually precedes the milestone review, except at program initiation when the strategy is usually approved as part of the initial milestone decision review.

**7.1.3. Use Of Commercial And Nondevelopmental Items (CANDI).** In developing and updating the acquisition strategy, the SM will consider all prospective sources of supplies and/or services (both domestic and foreign) that can meet the need. CANDI will be considered as the primary source of supply.

7.1.3.1. Market research and analysis will be conducted to:

- Determine the availability and suitability of existing commercial and NDIs prior to the commencement of a development effort, during the development effort, and prior to the preparation of any product description.
- Identify and evaluate possible dual use technologies and commercial suppliers throughout R&D. Contractors will also be encouraged to integrate military production into commercial production to the maximum extent possible.

7.1.3.2. The SM will structure the acquisition strategy to promote sufficient program stability to encourage industry to invest, plan, and bear risks. Program needs will be met through reliance on a national technology and industrial base sustained primarily by commercial demand, and minimize the need for new defense unique industrial capabilities. Foreign sources and international cooperative developments will be used where advantageous and within limitations of the law (DFARS Part 225).

**7.1.4. APB.** Every acquisition program will establish an APB to document the cost, schedule, performance objectives, and thresholds of that program beginning at program initiation.

- The **objective value** is that desired by the user and which the SM is attempting to obtain. The objective value could represent an operationally meaningful, time critical and cost effective increment above the threshold for each program parameter. Program objectives (parameters and values) may be refined based on the results of the preceding program phase(s).
- The **threshold value** is the minimum acceptable value that, in the user's judgment, is necessary to satisfy the need. If threshold values are not achieved, program performance is seriously degraded, the program may be too costly, or the program may no longer be timely. The spread between objective and threshold values will be individually set for each program based on the characteristics of the program (e.g., maturity, risk, etc.).

7.1.4.1. Every acquisition program will establish an APB to document the cost, schedule, and performance objectives and thresholds of that program beginning at program initiation. Performance will include supportability and, as applicable, environmental requirements. For Acquisition Category (ACAT) I programs, the APB implements the requirement in **10 USC ß 2220(a)(1) and ß 2435** beginning at Milestone I. The format for the APB is included in the Consolidated Acquisition Reporting System (see Appendix I).

7.1.4.2. The Program Manager, in coordination with the user, will prepare the APB at program initiation for ACAT I and ACAT IA programs, at each subsequent major milestone decision, and following a program restructure or an unrecoverable program deviation. The PEO and the CAE, as appropriate, will concur in the APB. The MDA will approve the APB. For ACAT I and ACAT IA programs, the MDA will not approve the APB without the coordination of the USD Comptroller (**10 USC ß 2220(a)(2))** and the Joint Requirements Oversight Council (JROC) or, in the case of ACAT IA programs, the Principal Staff Assistant in place of the JROC (where applicable).

7.1.4.3. The approved APB establishes a commitment between the SM, and PEO or DAC, and the AFAE and serves as a basis for accountability of the SM, the PEO, and the DAC.

7.1.4.4. The APB will contain only the most important cost, schedule, and performance parameters. The most important parameters are those that, if the thresholds are not met, the MDA will require a reevaluation of alternative concepts or design approaches. The values of the parameters will represent the program in the manner in which it is expected to be produced or deployed.

- Performance. The specificity and number of performance parameters evolve as the program is better defined. At Milestone I, performance parameters will be defined in broad terms. Measures of effectiveness or measures of performance will be used in describing needed capabilities early in a program. More specific program parameters will be added as necessary to the APB as the program requirements become better defined.
- Schedule. The schedule parameters will include program initiation, major milestone decision points, initial operating capability, and any other critical system events. These specific other critical events will be proposed by the SM and approved by the MDA for each program.
- Cost. The cost parameters will be in base year dollars and limited to:
  - RDT&E costs
  - Procurement costs
  - Military construction costs
  - The costs of acquisition items procured with O&M funds, if applicable
  - Total quantity (to include both fully configured development and production units)
  - Average unit procurement cost (defined as the total procurement cost divided by total procurement quantity)
  - Program acquisition unit cost (defined as the total of all acquisition related appropriations divided by the total quantity of fully configured end items)
  - Any other cost objectives designated by the MDA, (e.g., Life cycle cost objective).

7.1.4.5. As the program progresses through later acquisition phases, procurement costs will be refined based on contractor actual (or return) costs from PD&RR, EMD, or from initial production lots. In all cases, the cost parameters will reflect the total program and be realistic cost estimates, based on a careful assessment of risks and realistic appraisals of the level of costs most likely to be realized. The amount budgeted will not exceed the total cost threshold estimated in the APB. For ACAT IA programs, the ACAT I cost parameters apply, with the addition of military pay and the costs of acquisition items procured with DWCF.

7.1.5. Phase I Exit Criteria. At each milestone review, the SM will propose exit criteria appropriate to the next phase of the program. The MDA will approve the exit criteria. MDAs will use exit criteria to establish goals for ACAT I (10 USC 2220(a)(1) and ACAT IA programs during an acquisition phase.

7.1.5.1. Exit Criteria:

- Are normally selected to track progress in important technical, schedule, or management risk areas

- Serve as gates that, when successfully passed or exited, demonstrate that the program is on track to achieve its final program goals and should be allowed to continue with additional activities within an acquisition phase or be considered for continuation into the next acquisition phase
- Are not part of the APB
- Are not intended to repeat or usurp the minimum required accomplishments for each phase contained in the APB or DoD 5000.2-R

7.1.5.2. Exit Criteria does not cause program deviations. There are some levels of demonstrated performance outcome or efficiency, or specific event(s) that indicate aspects of the program are progressing satisfactorily, such as:

- A level of engine thrust
- Manufacturing yield
- First flight
- Establishment of a training program
- Inclusion of a particular clause in the follow on contract.

7.1.6. ADM. The ADM documents decisions made as the result of a milestone decision review or in process review. The MDA signs it. If the MDA approves the SM's request to move to Milestone I with the modification program, an ADM is prepared that contains the following:

- Approval to initiate a new acquisition and entry into Phase I
- Approval of the acquisition strategy and program baseline
- Approval of the SM's established Phase I Exit Criteria
- Identification of any affordability constraints.

**7.2. The IMP And Integrated Master Schedule (IMS).** The IMP is a program/project event plan that provides top level control and progress management to any type of effort. It intends to capture all work effort required of a program at a top level. The key program objectives and risks to be managed, not avoided, will shape and characterize the IMP for your program. There should be sufficient definition to track step by step completion of required accomplishments and the completion criteria for each accomplishment. The structure allows the highlighting of critical areas to properly manage risks. The IMP is a contractually binding document.

7.2.1. The IMS is an integrated and networked multilayered schedule of program tasks. The IMS is directly traceable to the IMP and other program documentation, e.g., Work Breakdown Structure, SOO, Cost Performance Reports, APB, etc. The IMS is a CDRL item that can be easily updated without a contract change.

**7.3. Contract Award.** Once PMD direction has occurred and budget authority provided, the SM can commit, obligate, and expend funds through contract action(s) to begin development activity. Contract award for a modification follows the same steps as any other acquisition:

- Final Purchase Requisition preparation (includes SOO and CDRL at minimum)
- Request For Proposal release

- Contractor proposal preparation [under the Defense Management Review Directive this step might also involve government depot activities]
- Source selection
- Contract award.

**7.4. Logistic Updates** . ILS is a unified approach to the management of technical activities. It is necessary to ensure that required support considerations influence both requirements and system design. The following are brief descriptions of the 10 ILS elements. The Modification Manager should be aware that these elements need to be considered and updated, as necessary, during the modification process.

- Maintenance Planning - basis for all ILS elements, concepts, plans, requirements, activation
- Manpower And Personnel - Manpower requirements, skills/grades to field system
- Supply Support - Provisioning for initial support: buying, distributing, replenishing, modifying, inventory spares and repair parts
- Support Equipment - Equipment to support O&M of weapon system, assure availability, develop concurrently with system/equipment
- Technical Data - Data to develop, produce, support, operate and support systems and equipment in a state of readiness
- Training And Training Support - Processes and equipment to train personnel to operate and maintain weapon system
- Computer Resources Support - Facilities, hardware, software and personnel needed to operate and support mission critical systems
- Facilities - Real property assets required to support weapon system; ensure availability; modifica tion
- Packaging, Handling, Storage And Transportation - Ensures system, equipment and support items are transportable and properly packaged, handled, stored and transported safely and economically
- Design Interface - Relate logistic design parameters to system readiness resource requirements and support costs.

## Chapter 8

## PROGRAM DEFINITION AND RISK REDUCTION (PART I)

**8.1. General.** During Phase 0, the MDA determined whether establishment of a new modification was warranted and affordable, and if resources were available or could be programmed. At this point, the MDA must assess the affordability of the proposed modification. A yes decision at Milestone I authorizes entry into Phase I and a continuation of the phased activities.

**8.2. Phase I: PD&RR.** During this phase:

- The program will become defined as one or more concepts, design approaches, and/or parallel technologies, and are pursued as warranted.
- Assessments of the advantages and disadvantages of alternative concepts will be refined.
- Prototyping, demonstrations, and early operational assessments will be considered and included as necessary to reduce risk so that technology, manufacturing, and support risks are well in hand before the next decision point.
- Early testing of prototypes in Phase I, PD&RR, and early operational assessments will be emphasized to assist in identifying risks.
- System (to include the crew) survivability from all threats found in the various levels of conflict will be considered and fully assessed as early as possible in the program, usually during Phase I.
- Evolutionary and incremental software will be developed.

8.2.1. The ORD will be updated and expanded for MS II, EMD approval, to include thresholds and objectives for more detailed and refined performance capabilities and characteristics, which are based on the results of tradeoff studies and testing conducted during Phase I.

**8.3. Alternative Solutions.** The feasibility of alternative concepts and the basis for assessing the relative merits of those concepts were defined and evaluated in the CE Phase.

8.3.1. During the PD&RR, the program will become defined as one or more concepts, design approaches, and/or parallel technologies and pursued as warranted. Assessments of the advantages and disadvantages of alternative concepts will be refined.

8.3.2. The MDA may direct updates to the analysis for subsequent decision points, if conditions warrant. For example, an analysis of alternatives may be useful in examining cost performance trades at Milestone II. The information and knowledge obtained through Market Research will be used to select or develop the optimum solution. For information on Market Research refer to Chapter 2.

**8.4. Funding Actions.** Depending on the development of the program, some funding action requirements may be identified during CE. If also required for Phase I, you will need to update the existing funding. If Phase I requirements were not identified during the previous phase, you will need to initiate new requirements as described in Chapter 6, Funding Actions.

**8.5. The SAMP.** A SAMP will be prepared as a result of either of two events:

- The request of the MDA, DAC, PEO, AFAE or Defense Acquisition Executive (DAE)

- A major change in acquisition or program management strategy. The SAMP will need to be updated periodically as a program matures. Annual updates are not required.

8.5.1. A description of the SAMP was provided previously in Chapter 6, CE Phase. Refer to the discussion in that chapter if an original is to be prepared during this phase.

8.5.2. The process to update a SAMP is similar to the one used to develop the original document. The PEO/DAC, AFAE, or DAE can request an updated plan at anytime. In addition, the SM can also initiate an update. An update is required only when there has been a significant change to the acquisition or program management strategy previously approved in the SAMP or for a Milestone Decision.

8.5.3. Once the program office is aware of the need to update the SAMP, the Program Office will present the applicable issues to the working group. The working group will develop the update to the SAMP. This update could be as simple as a few page changes or as extensive as a complete rewrite. The working group will need to make that determination.

8.5.4. The SAMP working group will recommend to the SM the signatures required for the updated SAMP. For example, if the SAMP update is the result of a change to the acquisition strategy and there is no significant change to the test portion of the document, the test organization representatives may determine that their organizations' approval on the original plan is still adequate for this update. Copies of the updated SAMP must be provided to all the signatory organizations regardless of whether they sign the update or not.

## Chapter 9

## PROGRAM DEFINITION AND RISK REDUCTION (PART II)

### 9.1. Milestone II Review Requirements and Objectives.

9.1.1. Approval To Enter EMD. The purpose of the Milestone II decision point is to determine if the results of Phase I warrant continuation of the program and to approve entry into EMD (or software engineering and development for a software intensive system). The Low Rate Initial Production LRIP strategy and decision authority will be considered at Milestone II.

9.1.2. Low Rate Initial Production (LRIP) is the minimum number of systems (other than satellites) to provide production representative articles for Operational Test and Evaluation (OT&E), to establish an initial production base, and to permit an orderly increase in the production rate sufficient to lead to full rate production upon successful completion of operational testing.

9.1.3. For MDAPs, Low Rate Initial Production quantities in excess of 10 percent of the acquisition objective must be reported in the SAR. For ships and satellites, Low Rate Initial Production is the minimum quantity and rate that preserves mobilization.

9.1.4. At Milestone II, the MDA will approve the following:

- Acquisition Strategy
- CAIV Objectives
- APB (10 USC 2435), for ACAT I
- Phase II Exit Criteria
- LRIP Quantities (10 USC 2400) *
- Waiver from full up, system level Live Fire Test and Evaluation, if applicable (10 USC 2366).

***** Not applicable to ACAT IA programs.

9.1.5. The Director of OT&E and the Director of Test, Systems Engineering, and Evaluation will approve the TEMP for all Office of the Secretary of Defense test and evaluation oversight programs [10 USC 2366 and 2399].

**9.2. IMP/IMS.** If an IMP/IMS is required during CE, an update, not a new IMP/IMS, is required during this phase of the program.

9.2.1. The IMP and its supporting detailed schedule, the IMS, are used by the government and contractor as the primary tools for tracking a program's technical and schedule status and to determine appropriate risk mitigation efforts for the program. The program team needs to collectively agree on the risks to be managed and the level at which it is appropriate to be involved in the contractor's efforts. The IMP/IMS provide the government and the contractor with an efficient method for evaluating the maturity of the product.

**9.3. Configuration Management Action During Phase I.** The purpose of the configuration management process is to control the system products, processes, and related documentation. The configuration management effort includes identifying, documenting, and verifying the functional and physical characteristics of an item; recording the configuration of an item; and controlling changes to an item and its documentation. It provides a complete audit trail of decisions and design modifications.

9.3.1. The CCB is the formally organized body that has approval and disapproval authority over configuration changes. Modifications should be approved only when the proposal is completely defined, and the costs estimated for engineering, kits, spares, technical data, and support equipment are identified. The evaluation criteria for a final decision on pending mods include the following:

- Improve safety
- Accomplish the mission
- Compatible with other mods
- Remaining life of equipment/system.

9.3.2. The following identifies the final contents of the review packages, the briefing, and those actions leading to CCB approval of the modification package.

9.3.3. CCB Review Package (Final). The key Phase I activity is to prepare for the CCB using the package assembled in the previous phase that includes:

- AF Form 3525
- Acquisition Strategy Plan or (Acquisition Summary)
- ECP
- Advance Change/Study Notice used for CCB action for systems still in production
- Risk Assessment
- TCTO Preparation Request
- Draft PMD
- R&M Assessment.

9.3.4. CCB Briefing. The key decision comes when the ECP package is presented to the CCB for approval to change the item configuration. Each SM chairs his/her own CCB. The ECP will usually cover the following areas:

- Description of the problem and recommended solution(s)
- System(s) and components affected
- Results of all studies and analyses. Note: Logistics analysis includes spare consumption rate analysis, pipeline spares analysis, future workload analysis and future item requirements
- Approved Engineering Summary: Specifications, drawings, TOs, and affected interfaces
- Funding Profile: Type of funds, year of funds, quantities per year, options, and totals
- Risk Assessment: Technical, funding, schedules, logistics, and overall program.

9.3.5. CCB Approval. The CCB approved ECP is signed by the SM. A revision to the consolidated PMD is expected to be issued instead of individual PMDs for each modification.

**9.4. Contract Award Activities.** Once the ECP is approved and budget authority provided, the SM can commit, obligate and expend funds to implement the modification. Contract award for a modification follows the same steps as any other acquisition:

- Final PR preparation which includes the SOO and CDRL at a minimum
- Request for Proposal release

- Contractor proposal preparation (under the Defense Management Review Directive this step might also involve government depot activities)
- Source selection
- Contract award.

**9.5. Logistic Updates.** After contract award, a number of guidance conferences will be scheduled to address various logistics issues. Using the established provisioning guidelines, guidance conferences will be held 45 days after the contract award of LRIP or full production articles. A spares and support equipment provisioning conference provides for source code action and initiation of Provisioning Item Orders (PIO). A TO guidance conference provides assurance that the contractor understands the data requirements.

9.5.1. An alternative provisioning process is Spares Acquisition Integrated with Production. Using this philosophy, spares and support equipment are produced concurrently with the end item, and guidance conferences may occur based on earlier contract awards. If established as a program requirement, the Supportability Analysis database should also be reviewed and updated.

## Chapter 10

## ENGINEERING AND MANUFACTURING DEVELOPMENT

**10.1. Prototype Development And Trial Installation (Phase II).** During Phase I the approved modification was placed on contract and the engineering and design validated. In the Milestone II Decision Memorandum, MDA:

- Verifies that the SM meets the specific Phase I Exit Criteria and approves the proposed Phase II Exit Criteria.
- Approves the SM updated acquisition strategy and program baseline.
- Approves the continuation of the modification program.
- Validates previously established or new affordability constraints.

10.1.1. The next phase of the process, Phase II, is concerned with manufacture and assembly of kits and culminates with Milestone III Decision Review.

10.1.2. Market Research Applied. The MDA may direct updates to the analysis for subsequent decision points, if conditions warrant. For example, an analysis of alternatives may be useful in examining cost performance trades at Milestone II.

10.1.2.1. The information and knowledge obtained through Market Research will be used to select or develop the optimum solution. For information on Market Research refer to Chapter 2, DoD Acquisition Initiatives.

10.1.3. Prototype Development. The use of a prototype allows the engineering design to be validated and verified and is critical under the disciplined acquisition procedures. Not until the design is actually installed and the design has undergone Validation and Verification can full scale production begin. Under some circumstances the trial installation may be waived by the PEO/DAC.

10.1.3.1. Prior to any production, the design must be translated into specification, production drawings, kit listings, installation instructions, etc. A Preliminary Design Review and Critical Design Review are usually conducted before the production drawings are finalized. A prototype is usually developed to validate form, fit, and function, as well as produceability and supportability. A number of tradeoff decisions, for example make/buy, related to the components of the prototype are usually required. After these decisions are made, a prototype is assembled and tested. Laboratory testing verifies performance specification compliance.

10.1.4. Prototype Testing. As the system is modified and returned to operational status, testing is conducted to ensure that the modification meets the original mission needs or corrects the deficiency that generated the modification requirement. If any shortfalls are identified, whether operational or support, the SM may be required to stop production temporarily until they are resolved. In most cases, the problems identified at this point in a modification program are minor and can be corrected quickly with minimal schedule impacts.

10.1.5. Trial Installation. The requirement for modification kits to be procured and installed with the appropriate year's funds requires close attention during this phase of a modification program. In Phase II, the SM will authorize the procurement of a limited quantity of kits to support trial installation and kit proof.

10.1.5.1. The contractor manufactures a trial modification kit consisting of the Group A, Group B, and installation instructions (draft TCTO). The trial modification kit is now ready for installation and validation in an aircraft, missile, engine, etc. After installation the required ground testing, flight test, if required, is performed. The government performs a Functional Configuration Audit and a Physical Configuration Audit. In order to be successful the following objectives must be met during the trial installation.

- Validation of the engineering and proof that the defined critical design characteristics can be produced.
- Demonstration that the required technologies can be incorporated into the system/component. This demonstration will allow a validation of cost, schedule and performance parameters to update the baseline that was originally developed using engineering estimates.
- The installation can be performed under operational conditions.

**10.2. Kit Proof.** The kit proof of a modification is accomplished under the same conditions as those identified in the TCTO. If the modification is to be installed in the field then kit proof will normally be conducted at a base. If it is to be installed at the depot during Programmed Depot Maintenance then that is where it will be scheduled. The actual kit proof may be accomplished by the government or by the contractor under government cognizance. One of the primary functions of kit proofing is to ensure the form, fit, and function of the new/modified parts and the proposed system interface occurs with other systems and the modification can be installed IAW the TCTO. Any deficiencies noted during kit proof are to be documented on an AFTO Form 82.

10.2.1. In the event that the verification activity disapproves the TCTO or kit due to deficiencies, additional comments will be placed on the AFTO Form 82, Block 12 (or a continuation sheet) fully explaining the reason for rejection. A second AFTO Form 82 is required to certify successful accomplishment of follow-on verification.

**10.3. TCTO and TO Validation/Verification.** Validation and verification of the TCTO is simply a step by step process to ensure that the instructions contained in the TCTO are adequate to accomplish the modification installation. Validation is performed by the contractor for technical accuracy and adequacy.

10.3.1. The verification process is conducted by the government. The purpose of TCTO verification is to ensure:

- Technical guidance is complete
- Any associated kits are adequate and parts fit properly
- Skill levels are properly identified
- Designated support equipment performs satisfactorily
- Tooling requirements are provided
- Proper change marking instructions are included
- The change can be installed within the intended environment.

10.3.2. The first available production TCTO kit(s) will be used to satisfy the verification requirement. If the contractor developing the TCTO will perform installation, verification will not be required.

Associated commodity manuals impacted by the change will be verified in conjunction with the TCTO verification or during operational checkouts if required.

**10.4. OT&E.** OT&E is done on production representative equipment to prove the final design operates as developed. Air Force OT&E Center reviews all PMDs and appropriate draft MNSs or AF Form 1067s to determine OT&E requirements. Any number of organizations may do OT&E. AFMC is responsible for providing technical data for OT&E and competitive procurement for replenishment spare parts used during OT&E. AFMC will provide OT&E command resources as agreed upon in the TEMP. The SM is responsible for Qualification Test and Evaluation (QT&E). QT&E is performed in place of DT&E on programs where there has not been RDT&E. The test policies for DT&E apply to QT&E.

**10.5. Milestone III Review.** After a successful kit proof is accomplished, including the validation and verification (V/V) of the TCTO and other technical data, the SM is ready to request Milestone III approval. The SM presents the results of the kit proof and V/V to the MDA as a demonstration that the specific exit criteria established for Phase II have been met. Additionally, the SM verifies that the modification is still required and valid.

10.5.1. The following are requirements that must be successfully completed before the MDA will grant authority to move into Phase III of development:

- The need for the modification continues to be valid and the results of the kit proof and technical data V/V justify moving to the production phase.
- Kit proof results validated the kit installations can be performed under operational conditions (depot/field/contractor).
- The modification (Group A, Group B, affected software and technical data) design is stable. Operationally acceptable, logistically supportable and capable of being produced efficiently.
- Life cycle costs associated with the modification and annual funding requirements for kits and installation remain affordable.
- Adequate resources are still available or programmed to meet the needs of the modification program.

**10.6. Configuration Management Action.** The CCB is the single authority for each program/commodity responsible for identifying/establishing configuration baselines and documenting, reviewing/evaluating, and dispositioning of proposed changes/departures to baseline data. The CCB is chaired by the SPD/PGM/MGM or designated representative who has sole authority for disposition of all changes/departures (ECPs, Deviations, Waivers, etc.) from the approved baselines. The Chairperson is the final authority in the disposition of all CCB activities.

10.6.1. The Configuration Baselines are a set of documented technical requirements (i.e., specifications, drawings and code listings) that are approved and controlled through the CCB process. Key elements in the configuration baseline are the type of verification of the modification kit(s).

10.6.2. There are three main types/reasons for conducting verifications:

- Qualification - To verify that a new design or modification meets its requirements.
- First Article - To verify that a manufacturer can build a design that has already been qualified.

- Acceptance - To check that items coming off the assembly line are working properly and are ready for shipment.

10.6.3. Qualification is the most complex type of verification. It is performed to demonstrate that system requirements have been met. It covers the system requirements in the system/subsystem specifications and its associated interface requirement specifications.

10.6.4. Acceptance is the least complex. It is often conducted at ambient conditions. This testing demonstrates that an item or a group of items has been manufactured to specification. It is used for anything from a component to an aircraft. Site acceptance testing is when the item or system is taken into the MAJCOM environment and tested to ensure it will perform as specified in its intended environment.

10.6.5. FAT usually follows somewhere in between qualification and acceptance testing. FAT means testing and evaluating the first article for conformance with specified contract requirements before or in the initial stage of production. First articles are preproduction models, initial production samples, test samples, first lots, and pilot models. Approval means the contracting officer's written notification to the contractor accepting the test results of the first article. FAT ensures that the contractor can furnish a product that conforms to all contract requirements for acceptance

10.6.6. After an ECP is approved, the configuration baseline documentation is updated.

10.6.7. Related activities that are initiated as a result of the approved ECP include buying kits, preparing TCTOs, updating TOs, and updating provisioning and cataloging data.

## Chapter 11

## PRODUCTION, FIELDING/DEPLOYMENT, AND OPERATIONAL SUPPORT

**11.1. General.** During Phase II, limited production of the modification kits was authorized and kit proof was accomplished. In the Milestone III Decision Memorandum, the MDA certifies that:

- The need for the modification continues to be valid and the results of the kit proof warrant continuation of the program and entry into Phase III.
- The results of Phase II have demonstrated that the design is stable and that the modification can be installed in the operational environment (field or depot), logistically supported and produced efficiently.
- The acquisition strategy and modification program baseline have been updated and verified. The program life cycle costs and annual funding requirements remain affordable.
- Adequate resources are available or programmed to support kit production and installation, and logistics capability is available to support the modified system after return to operational status.
- Approval of the Phase III specific Exit Criteria.

11.1.1. The final phase of the modification management process deals with production and deployment of the modification. The following sections describe each of the activities associated with Phase III.

**11.2. Production Authorization.** The Production Acceptance Test (PAT) may occasionally be performed for items developed and procured in connection with a modification program. Two types of PATs are the FAT and the Acceptance Testing.

11.2.1. FATs. FATs are preproduction models, initial production samples, test samples, first lots, and pilot models. FAT ensures that the contractor can furnish a product that conforms to all contract requirements for acceptance. FAT may be appropriate when:

- The contractor has not previously furnished the LRU/Shop Replaceable Unit (LRU/SRU) to the Air Force.
- The contractor previously furnished the LRU/SRU to the Air Force, but there have been subsequent changes in processes or specifications, production has been discontinued for an extended period of time, or the LRU/SRU acquired under a previous contract developed a problem during its life.
- The LRU/SRU is described by a performance specification.
- It is essential to have an approved first article to serve as a manufacturing standard.

11.2.2. Acceptance Tests. Acceptance tests demonstrate that an item or a group of items have been manufactured to specification. Acceptance testing is used for anything from a component to an aircraft. Site acceptance testing is when the item or system is taken into the MAJCOM environment and tested to ensure it will perform as specified in its intended environment.

11.2.3. Kit production and installation must be closely coordinated to ensure that the appropriate year's funds are expended for each activity. In this Phase of the modification, the SM will authorize full production of kits (Group A and/or Group B). The contract vehicle(s) will normally be for one year with options to cover the period of production quantities based on the modification installation

schedule. In order to plan for changes in funds availability, the contract should be negotiated with a range of quantities rather than set quantities each year. For example, the contract options should allow for a quantity range of 25-50 instead of an option for 25 or one for 50. During the Production, Fielding/Deployment, and Operational Support phase the following actions occur:

- The formal TCTO is published along with any required changes to TOs.
- Kits are manufactured/assembled.
- Kit installation support equipment manufactured/assembled.
- Any new/modified spares and support equipment ordered.

**11.3. Kit Delivery/Installation Activities.** The SM must ensure that the Kit Manager/Production Management Specialist (PMS) maintain close coordination during kit delivery and installation. The PMS must verify that all required material and equipment are available before the system (aircraft, engine, etc.) is scheduled for modification installation. This includes kits, installation equipment, technical data (TOs and TCTO), and any modified/new support equipment. It is also critical that the information is tracked in the appropriate status accounting system. Once the systems have been modified, they are returned to operational status.

**11.4. Phase III Minimum Required Accomplishments.** To successfully complete this Phase of a modification program, the SM verifies that the following have occurred:

- The product baseline of the item modified has been updated.
- The APB has been updated with refined cost information.
- Operational/Support plans and threat assessments have been updated to incorporate the new or enhanced capability.

**11.5. Configuration Management Action.** Update status accounting system tools as follows:

- R&M Information System (REMIS). This system contains a history of actions taken against a system or end item.
- Comprehensive Engine Management System (CEMS). This system is used to track actions on aircraft engines.
- Expanded Minuteman Data Analysis System (EMDAS). This system is used to track all actions on Minuteman Missiles. It may be used to track actions on other missiles if needed.
- Tactical Interim Consolidated Aircraft Maintenance System and REMIS Reporting System (TICARRS). This system is used to record any and all actions against a system or components within an organization.

11.5.1. Inputs to the above listed system(s), where applicable, is required to reflect the installation of the new configuration.

**11.6. Kit Disposal.** Once the installation is complete, a number of residual tasks remain to complete the modification activity. The first of these tasks is to rescind the TCTO and close out records of the TCTO. Determine if there are excess TCTO kits and the quantity and location of the kits. The next task is the disposal of any remaining modification kits. Transfer aircraft or equipment with TCTOs still pending completion with their applicable TCTO kits. Retain engine TCTO kits for engines installed on aircraft at

depot locations if the aircraft is returning to that unit for TCTO compliance. Additional tasks that might be required are the disposal of any remaining old configuration spares and support equipment that are no longer required.

ROBERT P. BONGIOVI, Brig Gen, USAF
Director of Requirements

**Attachment 1**

**GLOSSARY OF ABBREVIATIONS AND ACRONYNS**

***Abbreviations and Acronyms***

**ACAT—**Acquisition Category

**ACI—**Analytical Condition Inspection

**ADM—**Acquisition Decision Memorandum

**AF—**Air Force

**AFAE—**Air Force Acquisition Executive

**AFI—**Air Force Instruction

**AFMAN—**Air Force Manual

**AFMC—**Air Force Materiel Command

**AFMC/CC—**Air Force Materiel Command Commander

**AFMCFARS—**Air Force Materiel Command Federal Acquisition Regulation Supplement

**AFMCI—**Air Force Materiel Command Instruction

**AFMCMAN—**Air Force Materiel Command Manual

**AFPD—**Air Force Policy Directive

**AFSAC—**Air Force Security Assistance Center

**AFSC—**Air Force Safety Center

**AFTO—**Air Force Technical Order

**ALC—**Air Logistic Center

**AP—**Acquisition Plan

**APB—**Acquisition Program Baseline

**ASD—**Assistant Secretary of Defense

**ASIP—**Aircraft Structural Integrity Program

**BES—**Budget Estimate Submission

**CAE—**Component Acquisition Executive

**CAIV—**Cost as an Independent Variable

**CANDI—**Commercial and Nondevelopmental Items

**CCB—**Configuration Control Board

**CDRL—**Contract Data Requirements List

**CE—**Concept Exploration

**CEMS—**Comprehensive Engine Management System

**CIO—**Chief Information Officer

**CLS—**Contractor Logistics Support

**CMCS—**Case Management Control System

**COO—**Chief Operations Officer

**COTS—**Commercial Off The Shelf

**CP—**Central Procurement

**CPAS—**Central Procurement Accounting System

**CRA—**Continuing Resolution Authority

**C3I—**Command, Control, Communications

**DAB—**Defense Acquisition Board

**DAC—**Designated Acquisition Commander

**DAE—**Defense Acquisition Executive

**DAES—**Defense Acquisition Executive Summary

**DFARS—**DOD FAR Supplement

**DID—**Data Item Description

**DMAG—**Depot Maintenance Activity Group

**DoD or DOD—**Department of Defense

**DPG—**Defense Planning Guidance

**DR—**Deficiency Report

**DT&E—**Development, Test, And Evaluation

**DWCF—**Defense Working Capital Fund

**ECP—**Engineering Change Proposal

**EEIC—**Element of Expense Investment Code

**EMD—**Engineering And Manufacturing Development

**EMDAS—**Expanded Minuteman Data Analysis System

**FAR—**Federal Acquisition Regulation

**FAT—**First Article Test

**FMFP—**Foreign Military Financing Program

**FMS—**Foreign Military Sales

**FY—**Fiscal Year

**FYDP—**Future Years Defense Plan

**HQ AFMC—**Headquarters, Air Force Materiel Command

**HQ USAF—**Headquarters, United States Air Force

**IDEA—**Innovative Development Through Employee Awareness

**ILS—**Integrated Logistics Support

**IMET—**International Military Education and Training

**IMMP—**Integrated Modification Management Plan

**IMP—**Integrated Master Plan

**IMS—**Integrated Master Schedule

**IPD—**International Programming Directive

**IPT—**Integrated Product Team

**IWSM—**Integrated Weapon System Management

**J&A—**Justification and Approval

**JROC—**Joint Requirements Oversight Council

**LRU—**Line Replaceable Unit

**LOA—**Letter of Acceptance

**LOAD—**Letter of Acceptance Data

**LOR—**Letter of Request

**LSA—**Logistics Support Analysis

**MAIS—**Major Automated Information System

**MAISRC—**Major Automated Information System Review Council

**MAJCOM—**Major Command

**MDA—**Milestone Decision Authority

**MDAP—**Major Defense Acquisition Programs

**MGM—**Materiel Group Manager

**MIL-STD—**Military Standard

**MIP—**Materiel Improvement Project

**MNS—**Mission Need Statement

**ModIPT—**Modification Integrated Product Team

**NDI—**Nondevelopmental Item

**O&M—**Operations and Maintenance

**ORD—**Operational Requirements Document

**OT&E—**Operational Test and Evaluation

**P—**Permanent

**PAT—**Production Acceptance Test

**PB—**President's Budget

**PD&RR—**Definition and Risk Reduction

**PDM—**Program Decision Memorandum

**PEO—**Program Executive Officer

**PGM—**Product Group Manager

**PIWG—**Product Improvement Working Group

**PIO—**Provisioned Item Order

**PMA—**Program Management Administration

**PMD—**Program Management Directive

**PMS—**Production Management Specialist

**POM—**Program Objective Memorandum

**PPBS—**Planning, Programming, and Budgeting System

**PR—**Purchase Request

**QT&E—**Qualification Test and Evaluation

**R&D—**Research and Development

**R&M—**Reliability and Maintainability

**RCM—**Requirements Correlation Matrix

**RDT&E—**Research, Development, Test and Evaluation

**REMIS—**Reliability and Maintainability Information System

**S—**Safety

**SAF/AQ—**Secretary of the Air Force for Acquisition

**SAMIS—**Security Assistance Management Information System

**SAMP—**Single Acquisition Management Plan

**SAR—**Selected Acquisition Report

**SM—**Single Manager

**SMAG—**Supply Management Activity Group

**SOO—**Statement of Objective

**SRU—**Shop Replaceable Unit

**SPD—**System Program Director

**SPI—**Single Process Initiative

**TCTO—**Time Compliance Technical Order

**TEMP—**Test and Evaluation Master Plan

**TICARRS—**Tactical Interim Consolidated Aircraft Maintenance System and REMIS Reporting System

**TO—**Technical Order

**USD(A&T)—**Under Secretary of Defense (Acquisition and Technology)